

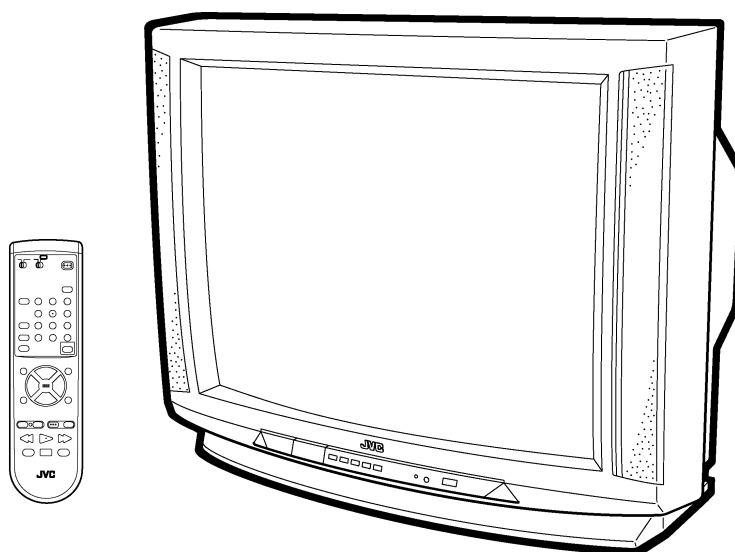
JVC

SERVICE MANUAL

COLOR TELEVISION

AV-20D202/S AV-20D202/R

BASIC CHASSIS
FD



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SPECIFICATIONS

Items	Contents
Dimensions (W × H × D)	23-3/8" × 18" × 19-1/4" / 592mm × 456mm × 487mm
Mass	45.0 lbs / 20.4 kg
Reception Format	NTSC, BTSC System (Multi-Channel Sound)
Reception Range VHF, UHF	
VL Band	(02~06) 54MHz~88MHz
VH Band	(07~13) 174MHz~216MHz
UHF Band	(14~69) 470MHz~806MHz
CATV	
Low Band	(02~06, A-8) by (02~06&01)
High Band	(07~13) by (07~13)
Mid Band	(A~1) by (14~22)
Super Band	(J~W) by (23~36)
Hyper Band	(W+1~W+28) by (37~64)
Ultra Band	(W+29~W+84) by (65~125)
Sub Mid Band	(A8, A4~A1) by (01, 96~99)
TV/CATV Total Channel	181 Channels
	(54MHz~804MHz)
Intermediate Frequency	
Video IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz (4.5MHz)
Color Sub Carrier	3.58MHz
Power Input	120V AC, 60Hz
Power Consumption	87W
Picture Tube	20" (51cm) Measured Diagonally
High Voltage	26.5kV ± 1kV (at zero beam current)
Speaker	2" × 3-1/2" / 5 × 9cm Oval type × 2
Audio Power Output	1.0W + 1.0W
Input terminal	
Input 1	
S-Video	Y: 1Vp-p Positive (negative sync provided, when terminated with 75 Ω) C: 0.286Vp-p (burst signal, when terminated with 75 Ω)
Video(V)	1Vp-p, 75 Ω (RCA pin jack)
Audio(L, R)	500mVrms (-4dBs), High Impedance (RCA pin jack)
Input 2	
Component Video	
Y, Pb, Pr	1Vp-p 75 Ω (positive sync)
Input 3	
(Front)	
Video(V)	1Vp-p, 75 Ω (RCA pin jack)
Audio(L, R)	500mVrms (-4dBs), High Impedance (RCA pin jack)
Output terminal	
Variable Audio Output (R/L)	More than 0~1550mVrms (+6dBs) Low impedance (400Hz when modulated 100%) (RCA pin jack)
Antenna terminal	75 Ω (VHF/UHF) Terminal, F-Type Connector
Remote Control Unit	RM-C304-1A (AA/R6/UM-3 battery × 2)

Design & specifications are subject to change without notice.

SAFETY PRECAUTIONS

- The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
- Use isolation transformer when hot chassis.**
The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
- Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (↵) side GND and EARTH : (⊕) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.
- If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
- The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
- Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
- When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

10. Isolation Check

(Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.

(. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)

This method of test requires a test equipment not generally found in the service trade.

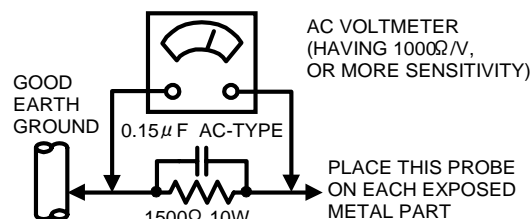
(2) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● Alternate Check Method

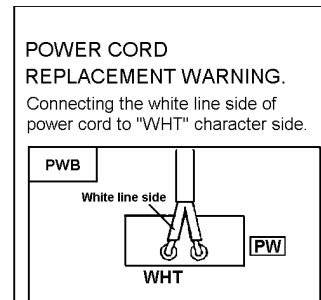
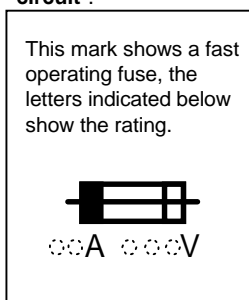
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.). However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



11. High voltage hold down circuit check.

After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.

See item "How to check the high voltage hold down circuit".

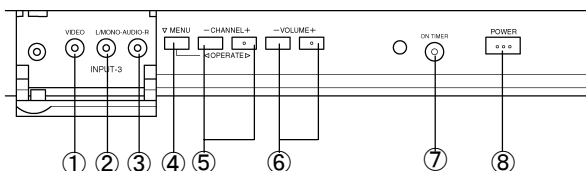


FEATURES

- New chassis design enables use of a single board with simplified circuitry.
- Users can make fun to connect the Digital Video Disk player with the component video signal input terminal.
- Provided with miniature tuner (TV/CATV).
- Multifunctional remote control permits picture adjustment.
- Adoption of the CHANNEL GUARD function prevents the specific channels from being selected, unless the "ID number" is key in.
- I²C bus control utilizes single chip ICs.
- Adoption of the VIDEO STATUS function.
- Adoption of the ON/OFF TIMER function.
- Built-in V-CHIP system.
- With 75 Ω V/U in common (F-Type) ANT Terminal.
- SLEEP TIMER for setting in real time.
- Closed-caption broadcasts can be viewed.
- Built-in MTS system.
- Built-in HYPER-SURROUND system.
- S-VIDEO input terminal for taking best advantage of Super VHS.
- Variable Audio output terminal.
- 2 LINE Digital Comb filter Improved picture quality.

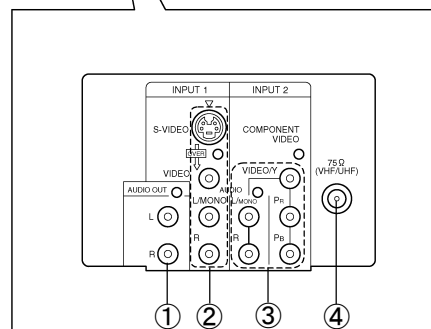
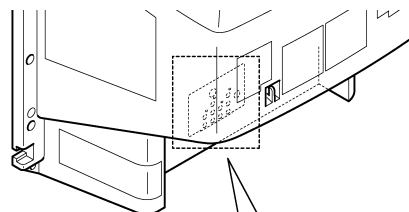
FUNCTIONS

FRONT PANEL CONTROL



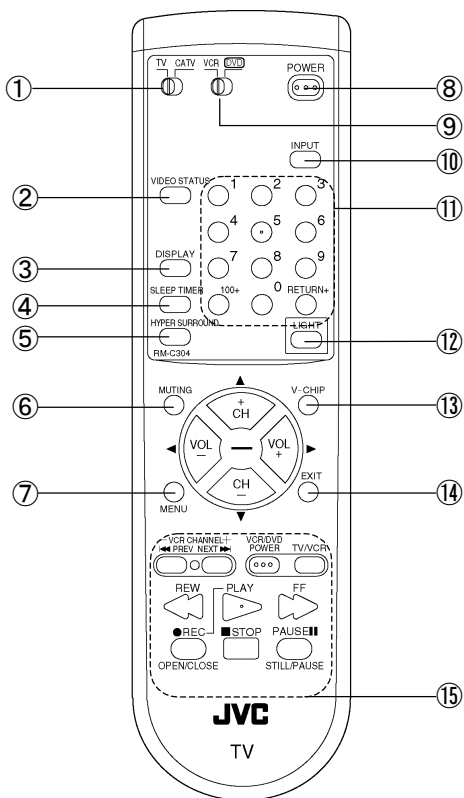
- ① VIDEO INPUT TERMINAL
- ② AUDIO L INPUT TERMINAL
- ③ AUDIO R INPUT TERMINAL
- ④ MENU KEY
- ⑤ CHANNEL +/- KEY (OPERATE KEY)
- ⑥ VOLUME +/- KEY
- ⑦ ON TIMER LED
- ⑧ POWER BUTTON

REAR TERMINAL



- ① AUDIO OUTPUT TERMINAL
- ② INPUT1 TERMINAL(S, V, L, R)
- ③ INPUT2 TERMINAL(V/Y, PR, PB, L, R)
- ④ AERIAL SOCKET

REMOTE CONTROL UNIT [RM-C304]



- ① TV / CATV
- ② VIDEO STATUS
- ③ DISPLAY
- ④ SLEEP TIMER
- ⑤ HYPER SURROUND
- ⑥ MUTING
- ⑦ MENU
- ⑧ POWER
- ⑨ VCR / DVD
- ⑩ INPUT
- ⑪ CHANNEL KEYS
- ⑫ LIGHT
- ⑬ V-CHIP
- ⑭ EXIT
- ⑮ VCR CONTROL KEYS

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Disconnect the power plug from wall outlet.
2. As shown in the Fig.1, remove the **9** screws marked **(A)** .
3. As shown in Fig.1, remove the **4** screws marked **(B)** .
4. Then remove the REAR COVER toward you.

REMOVING THE MAIN PWB

- After removing the REAR COVER.
1. Slightly raise the both sides of the Main PWB by hand and remove the Main PWB from the front cabinet.
 2. Withdraw the chassis backward.
(If necessary, remove the wire clamp, connectors etc.)

REMOVING THE SPEAKER

- After removing the rear cover.
1. As shown in Fig. 1, removing the screws marked **(C)** , then remove the speaker.
 2. Follow the same steps when removing the other hand speaker.

NOTE : When removing the screws marked **(C)** of the speaker, remove the lower side screw first, and then remove the upper one.

CHECKING THE PW BOARD

To check the PW Board from back side.

1. Pull out the chassis (refer to REMOVING THE MAIN PWB).
2. Erect the chassis vertically so that you can easily check the back side of the PW Board.

CAUTION

- When erecting the chassis, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the wire connector is properly connected.
- **When conducting a check with power supplied, be sure to confirm that the CRT EARTH WIRE (BRAIDED ASS' Y) is connected to the CRT SOCKET PW board.**

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together.
Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

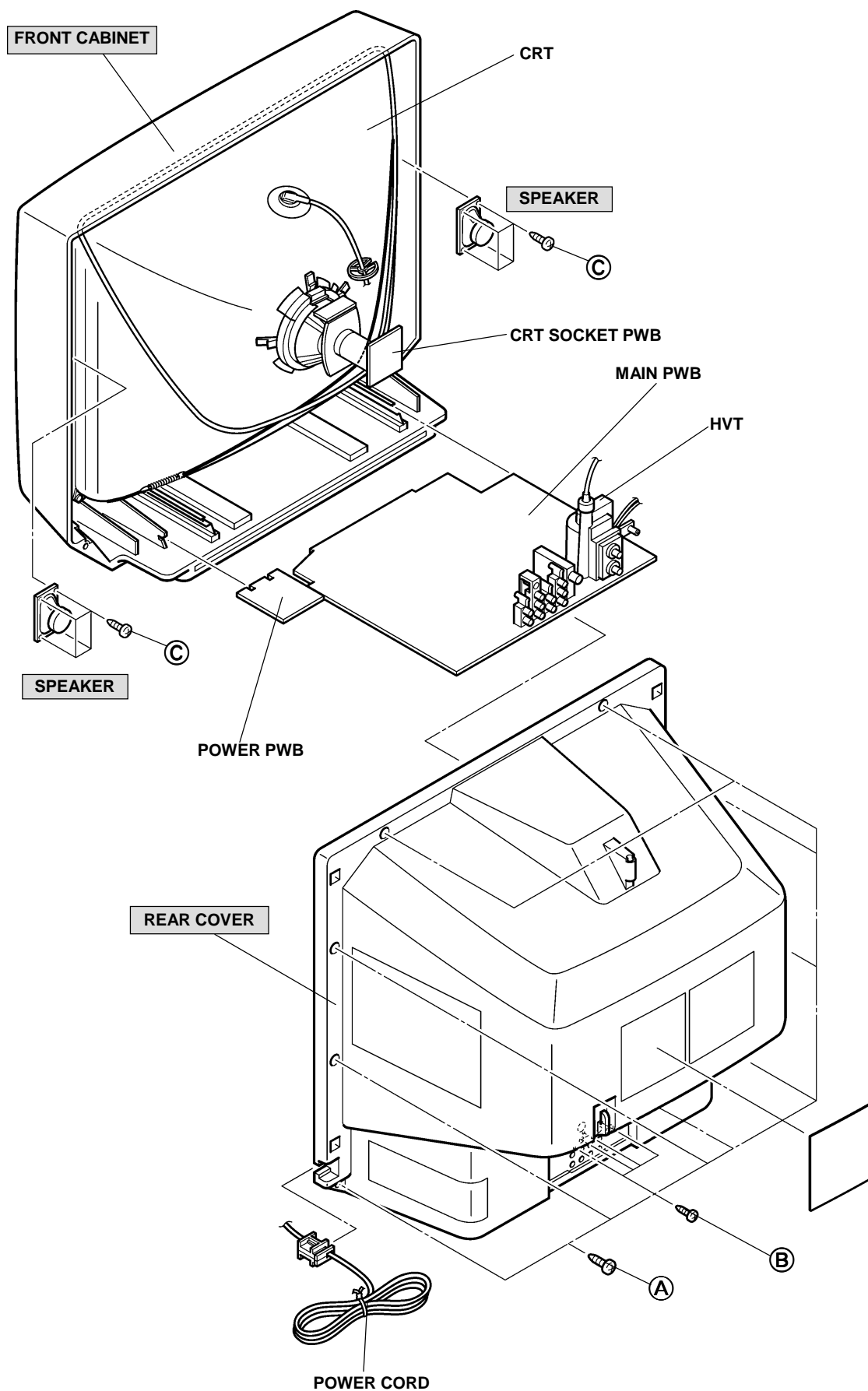


Fig.1

MEMORY IC REPLACEMENT

1. Memory IC

This model uses a memory IC.

This memory IC stores data for proper operation of the video and deflection circuits.

When replacing, be sure to use an IC containing this (initial value) data.

2. Memory IC replacement procedure

Procedure	Screen display																	
<p>(1) Power off Switch off the power and disconnect the power cord from the outlet.</p>																		
<p>(2) Replace the memory IC Initial value must be entered into the new IC.</p>																		
<p>(3) Power on Connect the power cord to the outlet and switch on the power.</p>																		
<p>(4) System constant check and setting</p> <ol style="list-style-type: none"> 1) Press SLEEP TIMER key and, while the indication of "SLEEP TIMER 0 MIN." is being displayed, press DISPLAY key and VIDEO STATUS key on the remote control unit simultaneously. 2) The SERVICE MENU screen of Fig.1 is displayed. 3) While the SERVICE MENU is displayed, again simultaneously press the DISPLAY and VIDEO STATUS keys to display the Fig.2 SYSTEM CONSTANT screen. 4) Refer to the SYSTEM CONSTANT table and check the setting items. Where these differ, select the setting item with the UP/DOWN (▲/▼) key and adjust the setting with the LEFT/RIGHT (◀/▶) keys. 5) After adjusting, release the LEFT/RIGHT (◀/▶) key to store the setting value. 6) Press the EXIT key twice to return the normal screen. 	<div data-bbox="933 1070 1300 1344" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; border-bottom: 1px solid black;">SERVICE MENU</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">PICTURE</td> <td style="width: 50%;">SOUND</td> </tr> <tr> <td>THEATER</td> <td></td> </tr> <tr> <td>LOW LIGHT</td> <td>HIGH LIGHT</td> </tr> <tr> <td>RF AFC CHK</td> <td></td> </tr> </table> <p style="font-size: small; border-top: 1px solid black; padding-top: 5px;"> SELECT BY ▲▼ EXIT BY OPERATE BY ◀▶ [EXIT] </p> </div> <p style="text-align: center; margin-top: 10px;">Fig.1</p> <div data-bbox="925 1556 1292 1825" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; border-bottom: 1px solid black;">SYSTEM CONSTANT</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">MODEL</td> <td style="width: 10%;">:</td> <td style="width: 60%;">**-*****</td> </tr> <tr> <td>V-CHIP</td> <td>:</td> <td>YES</td> </tr> <tr> <td>CAN V-CHIP</td> <td>:</td> <td>YES</td> </tr> </table> <p style="text-align: center; font-size: x-small; border-top: 1px solid black; padding-top: 5px;">*****-*****</p> <p style="font-size: small; border-top: 1px solid black; padding-top: 5px;"> SELECT BY ▲▼ EXIT BY OPERATE BY ◀▶ [EXIT] </p> </div> <p style="text-align: center; margin-top: 10px;">Fig.2</p>	PICTURE	SOUND	THEATER		LOW LIGHT	HIGH LIGHT	RF AFC CHK		MODEL	:	**-*****	V-CHIP	:	YES	CAN V-CHIP	:	YES
PICTURE	SOUND																	
THEATER																		
LOW LIGHT	HIGH LIGHT																	
RF AFC CHK																		
MODEL	:	**-*****																
V-CHIP	:	YES																
CAN V-CHIP	:	YES																
<p>(5) Receive channel setting Refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the receive channels (Channels Preset) as described.</p>																		
<p>(6) User settings Check the user setting items according to Table 2. Where these do not agree, refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the items as described.</p>																		
<p>(7) SERVICE MENU setting Verify what to set in the SERVICE MENU, and set whatever is necessary.(Fig.1) Refer to the SERVICE ADJUSTMENT for setting.</p>																		

TABLE 1 (System Constant setting)

Setting item	Setting content	Setting value
MODEL		AV-20D202
V-CHIP		YES
CAN V-CHIP		YES

TABLE 2 (User setting value)

Setting item	Setting value
1. Use remote controller keys	
POWER	ON
CHANNEL	CH 02
CHANNEL PRESET	See OPERATING INSTRUCTIONS.
VOLUME	10
TV/VIDEO(INPUT)	TV
DISPLAY	OFF
SLEEP TIMER	OFF
VIDEO STATUS	STANDARD
HYPER SURROUND	OFF
2. Setting of MENU	
TINT	CENTER
COLOR	CENTER
PICTURE	CENTER
BRIGHT	CENTER
DETAIL	CENTER
NOISE MUTING	ON
SET VIDEO STATUS	ALL CENTER
BASS	CENTER
TREBLE	CENTER
BALANCE	CENTER
MTS	STEREO
TV SPEAKER	ON
SET CLOCK	Unnecessary to set
ON/OFF TIMER	NO
LANGUAGE	ENGLISH
CLOSED CAPTION	OFF
BACKGROUND	BLACK
V2 COMPONENT IN	NO
AUTO TUNER SETUP	TUNER MODE : AIR
CHANNEL SUMMARY	Unnecessary to set
V-CHIP	OFF
V-CHIP RATINGS	ALL OFF
SET LOCK CODE	Unnecessary to set
UNRATED	VIEW

SERVICE ADJUSTMENTS

ADJUSTMENT PREPARATION

1. You can make the necessary adjustments for this unit with either the Remote Control Unit or With the adjustment tools and parts as given below.
2. Adjustment with the Remote Control Unit is made on the basis of the initial setting values, however, the new setting values which set the screen to its optimum condition may differ from the initial settings.
3. Make sure that AC power is turned on correctly.
4. Turn on the power for set and test equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
5. Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
6. Never touch any adjustment parts which are not specified in the list for this adjustment - variable resistors, transformers, condensers, etc.

7. Presetting before adjustment.
Unless otherwise specified in the adjustment instructions, preset the following functions with the remote control unit:

VIDEO STATUS	STANDARD
BASS, TREBLE, BALANCE	CENTER
HYPER SURROUND	OFF
TINT, COLOR, PICTURE, BRIGHT, DETAIL	CENTER

ADJUSTMENT EQUIPMENT

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [NTSC]
4. Remote control unit
5. TV audio multiplex signal generator.
6. Frequency counter

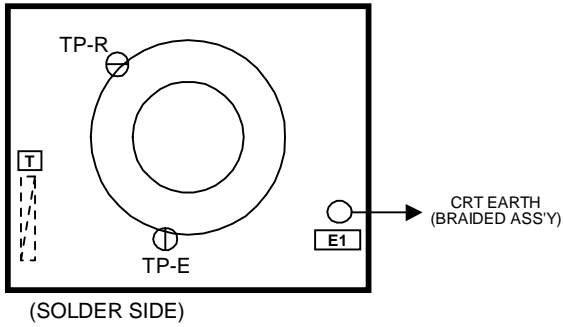
ADJUSTMENT ITEMS

Adjustment items	Adjustment items	Adjustment items
B1 POWER SUPPLY	WHITE BALANCE (High Light)	MTS STEREO VCO
RF. AGC	SUB BRIGHT	MTS SAP VCO
FOCUS	SUB CONTRAST	MTS FILTER check
V. SIZE	SUB COLOR	MTS SEPARATION
H. POSITION	SUB TINT	
WHITE BALANCE (Low Light)	MTS INPUT LEVEL check	

ADJUSTMENT LOCATIONS

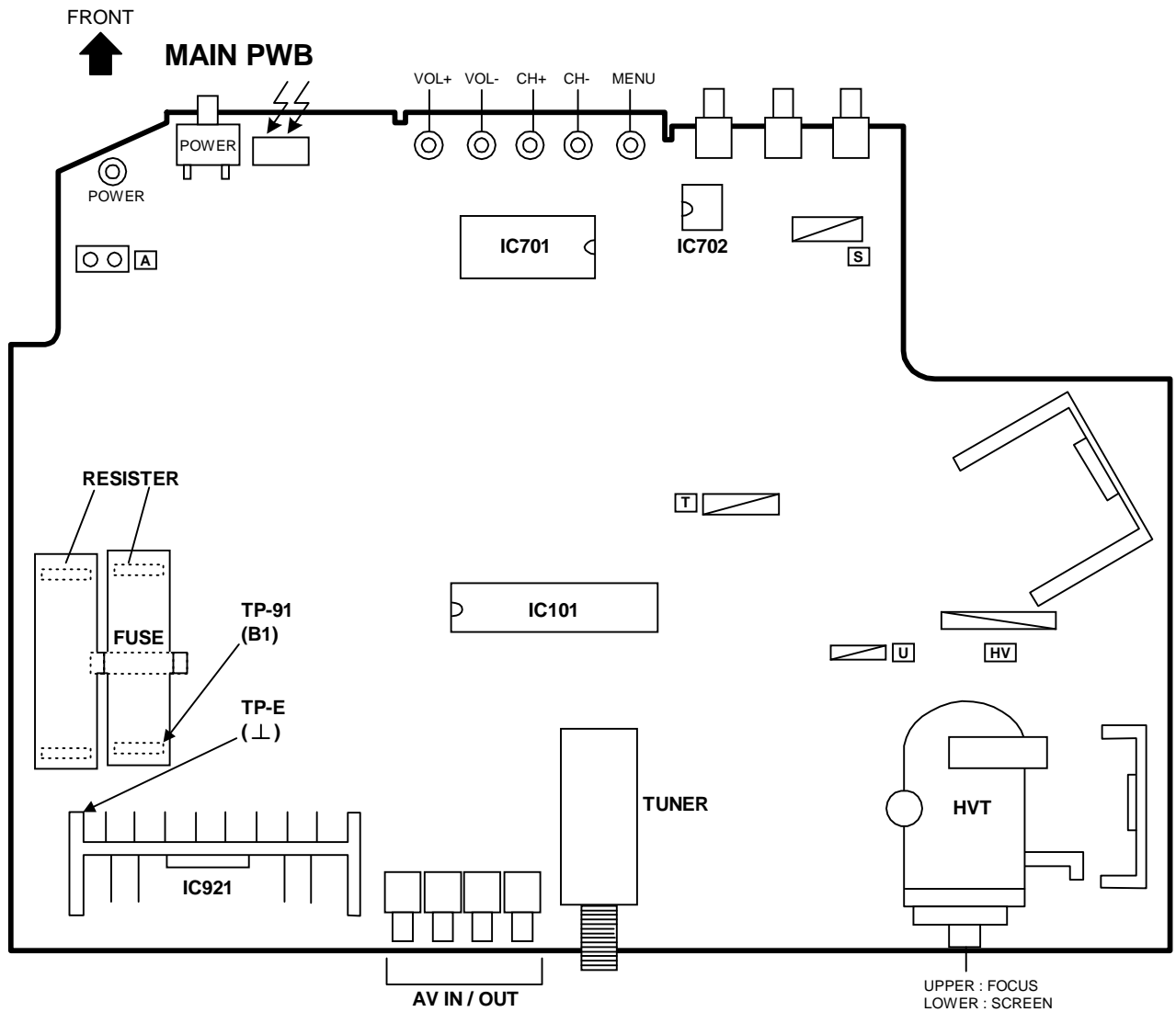
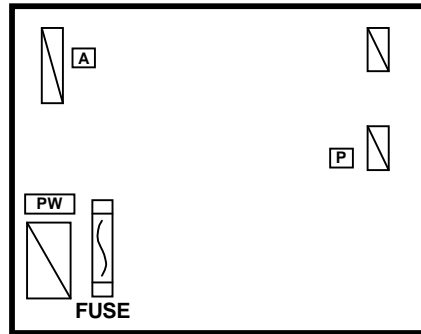
CRT SOCKET PWB
(Within MAIN PWB ASS'Y)

TOP
↑



POWER PWB

FRONT
↑



BASIC OPERATION OF SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. SERVICE MENU ITEMS

In general, basic setting (adjustments) items or verifications are performed in the SERVICE MENU.

- PICTURE This sets the setting values (adjustment values) of the VIDEO/CHROMA and DEFLECTION circuits.
- SOUND This sets the setting values (adjustment values) of the AUDIO circuit.
- THEATER This is used when the THEATER MODE is adjusted.
- LOW LIGHT This sets the setting values (adjustment values) of the WHITE BALANCE circuit.
- HIGH LIGHT This sets the setting values (adjustment values) of the WHITE BALANCE circuit.
- RF AFC CHK This is used when the IF VCO is adjusted. **[Do not adjust]**

3. Basic Operations of the SERVICE MENU

(1) How to enter the SERVICE MENU.

Press **SLEEP TIMER** key and, while the indication of "SLEEP TIMER 0 MIN." is being displayed, press **DISPLAY** key and **VIDEO STATUS** key on the remote control unit simultaneously to enter the **SERVICE MENU** screen ① shown in the next figure page.

(2) SERVICE MENU screen selection

Press the **UP / DOWN(▲/▼)** key to select any of the following items.

- PICTURE
- SOUND
- THEATER
- LOW LIGHT
- HIGH LIGHT
- RF AFC CHK

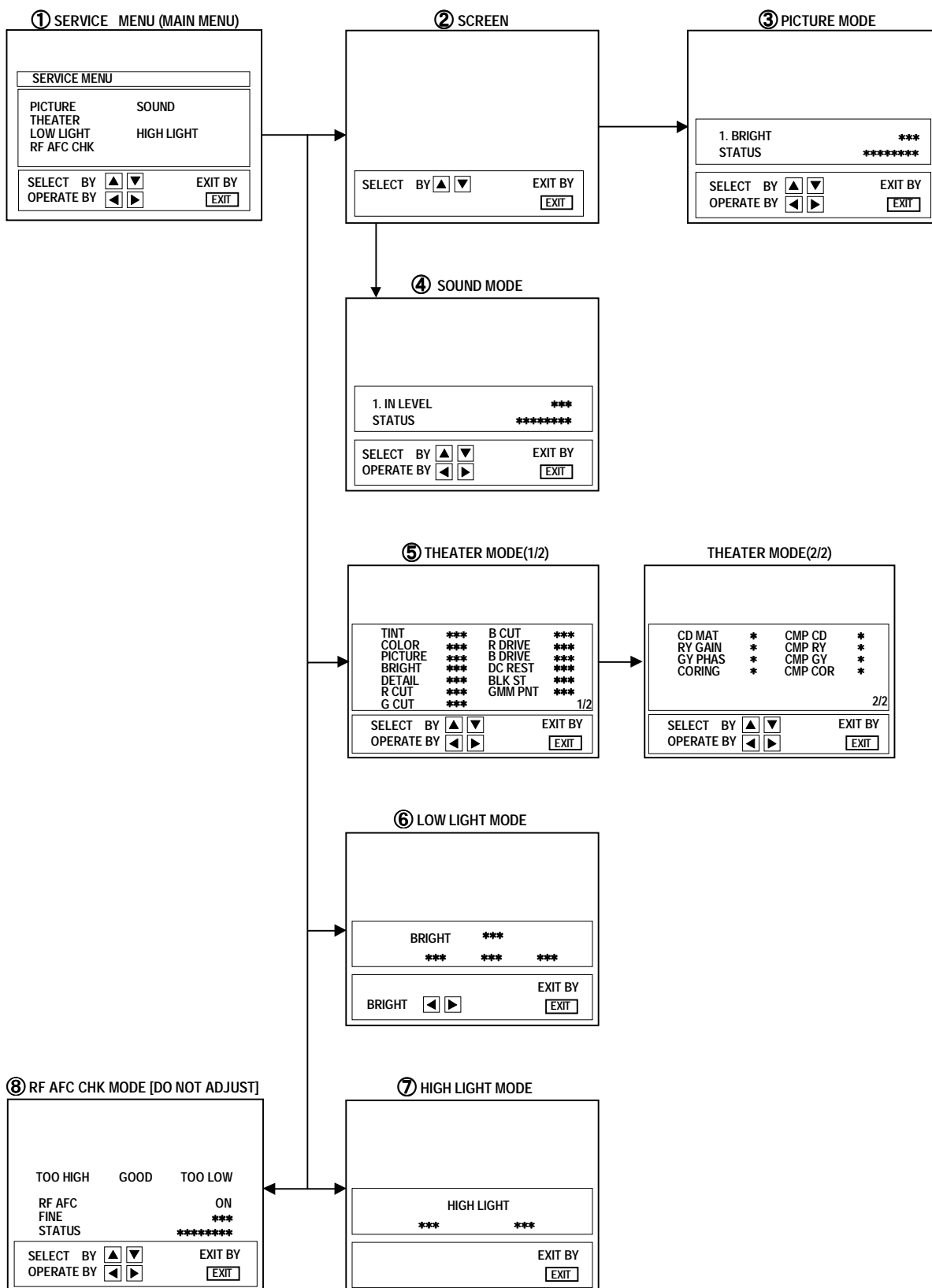
(3) Enter the any setting (adjustment) mode

● PICTURE and SOUND mode

- 1) If select any of PICTURE or SOUND items, and the **LEFT / RIGHT(◀/▶)** key is pressed from SERVICE MENU (MAIN MENU), the screen ② will be displayed as shown in figure page later.
- 2) Then the **UP / DOWN(▲/▼)** key is pressed, the PICTURE mode screen ③ or the SOUND mode screen ④ is displayed, and the PICTURE or SOUND setting can be performed.

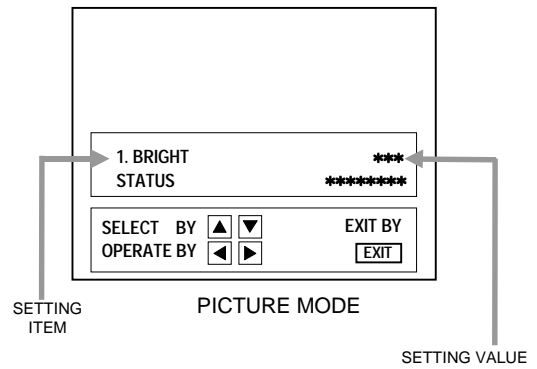
● THEATER, LOW LIGHT, HIGH LIGHT and RF AFC CHK mode

- 1) If select any of THEATER / LOW LIGHT / HIGH LIGHT / RF AFC CHK items, and the **LEFT / RIGHT(◀/▶)** key is pressed from SERVICE MENU (MAIN MENU), the screens ⑤ ⑥ ⑦ ⑧ will be displayed as shown in figure page later.
- 2) Then the settings or verifications can be performed.



(4) Setting method

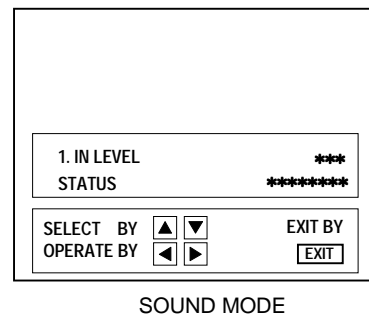
- 1) **UP / DOWN (▲/▼)**key.
Select the SETTING ITEM.
- 2) **LEFT / RIGHT(◀/▶)** key.
Setting (adjust) the SETTING VALUE of the SETTING ITEM.
When the key is released the SETTING VALUE will be stored (memorized).
- 3) **EXIT** key
Return to the previous screen.



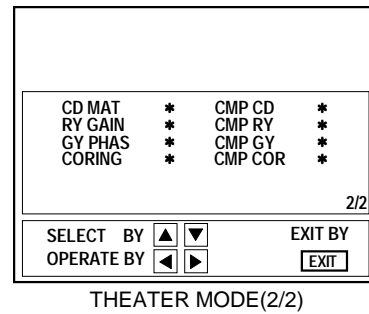
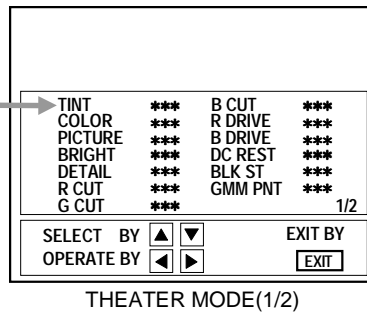
(5) Releasing SERVICE MENU

- 1) After returning to the SERVICE MENU upon completion of the setting (adjustment) work, press the EXIT key again.

★ The settings for LOW LIGHT and HIGH LIGHT are described in the WHITE BALANCE page of ADJUSTMENT.



(The letter of the selected items are displayed in yellow.)



INITIAL SETTING VALUE OF SERVICE MENU

1. Adjustment of the SERVICE MENU is made on the basis of the initial setting values; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.
2. Do not change the initial setting values of the setting (adjustment) items not listed in "ADJUSTMENT".

PICTURE MODE

- The 5 setting items in the video mode No.6 EXT BRI, No.7 EXT PICT, No.8 EXT CLR, No.9 EXT TINT and No.10 EXT DTL are linked to the items in the TV MODE No.1 BRIGHT, No.2 PICTURE, No.3 COLOR, No.4 TINT and No.5 TV DTL respectively. When the setting items in the TV mode are adjusted, the values in the setting items in the video mode are revised automatically to the same values in the TV mode. (The initial setting values given in parenthesis are offset values.)
- When the 5 items (No.6, 7, 8, 9 and 10) are adjusted in the video mode, the setting values in each item are changed independently.

No.	Setting (Adjustment) items	Variable range	Initial setting value
1.	BRIGHT	000~127	064
2.	PICTURE	000~127	098
3.	COLOR	000~127	054
4.	TINT	000~127	080
5.	TV DTL	000~63	050
6.	EXT BRI.	±025	-003
7.	EXT PICT.	±025	±000
8.	EXT CLR	±025	+002
9.	EXT TINT	±025	-005
10.	EXT DTL	000~063	050
11.	CMP BRI	±025	-001
12.	CMP PICT	±025	±000
13.	CMP CLR	000~127	072
14.	CMP TINT	000~127	037
15.	CMP DTL	000~063	050
16.	CMP R CT	±025	+008
17.	CMP G CT	±025	±000
18.	CMP B CT	±025	+008
19.	CMP R DR	±025	±000
20.	CMP B DR	±025	-002
21.	WPL	000 / 001	001
22.	C TRAP	000 / 001	000
23.	CORING	000 / 001	001
24.	CMP CORI	000 / 001	001
25.	TV SHAP	000 / 001	001
26.	EXT SHAP	000 / 001	001
27.	CMP SHAP	000 / 001	001
28.	RGB CONT	000~063	016
29.	TV ID S	000 / 001	000
30.	EXT ID S	000 / 001	000

No.	Setting (Adjustment) items	Variable range	Initial setting value
31.	F ID	000 / 001	000
32.	Y MUTE	000 / 001	000
33.	SUB CONT	000~015	008
34.	R Y GAIN	000 / 001	001
35.	CMP R Y	000 / 001	001
36.	G Y PHAS	000 / 001	001
37.	CMP G Y	000 / 001	001
38.	CD MATRI	000~003	003
39.	CMP CD M	000~003	001
40.	BLK ST	000~003	001
41.	DC REST	000~003	001
42.	CLR GMM	000 / 001	000
43.	UV / CBCR	000 / 001	000
44.	AT FLESH	000 / 001	000
45.	ABL GAIN	000~003	000
46.	ABL ST P	000~003	003
47.	RGB ABCL	000 / 001	001
48.	TV B/T	000 / 001	001
49.	EXT B/T	000 / 001	000
50.	GMM PNT	000~003	003
51.	BUZZ	000 / 001	000
52.	RF AGC	000~063	045
53.	AFT SENS	000 / 001	001
54.	R/G DRV	000 / 001	001
55.	BLK SW	000 / 001	000
56.	V S COR	000~015	009
57.	V LIN	000~015	010
58.	V SIZE	000~127	048
59.	V AGC	000 / 001	000
60.	TV AFC	000~003	001
61.	EXT AFC	000~003	002
62.	V POSI	000~007	000
63.	H POSI	000~031	018
64.	TV V FR	000~003	000
65.	EXT V FR	000~003	003
66.	STND BY	000 / 001	000
67.	V RMP RE	000 / 001	001
68.	V 48HZ	000 / 001	000
69.	V EHT	000~007	000
70.	H EHT	000~007	000

No.	Setting (Adjustment) items	Variable range	Initial setting value
71.	V BLK L	000~003	000
72.	V BLK U	000~003	001
73.	CCD IN	000 / 001	000
74.	H BLK	000 / 001	000
75.	OVER MD	000 / 001	001
76.	APACON L	000 / 001	001
77.	RF S/N T	000 / 001	000
78.	EX S/N T	000 / 001	000
79.	R S/N V1	000~063	000
80.	R S/N V2	000~063	000
81.	R S/N V3	000~063	000
82.	R S/N V4	000~063	000
83.	E S/N V1	000~063	000
84.	E S/N V2	000~063	000
85.	E S/N V3	000~063	000
86.	E S/N V4	000~063	000
87.	COR LEV	000~003	000
88.	VNR CHK	000~255	000
89.	VC SN TM	000~255	000
90.	VC SN SP	000~255	000
91.	CH MUTE	000 / 001	000
92.	OSD HP	000~031	018
93.	OSD VP	000~031	008
94.	FM TRAP	000 / 001	000
95.	OSC SEL	000 / 001	001
96.	SD SEL	000 / 001	001
97.	VF LK EX	000 / 001	000
98.	F LOCK	000~002	002
99.	AFC HIGH	000~064	031

SOUND MODE

No.	Setting (Adjustment) item	Variable range	Initial setting value
1.	IN LEVEL	000~063	024
2.	FH MON	000 / 001	000
3.	ST VCO	000~063	032
4.	PILOT	000 / 001	000
5.	FILTER	000~063	027
6.	LOW SEP	000~063	014
7.	HI SEP	000~063	021
8.	5FH MON	000 / 001	000
9.	SAP VCO	000~063	034
10.	BBE BASS	±010	-001
11.	BBE TRE	±010	-001

THEATER MODE

Setting (Adjustment) item	Variable range	Initial setting value
TINT	±20	-06
COLOR	±20	-05
PICTURE	±50	-08
BRIGHT	±20	±00
DETAIL	±20	+03
R CUT	±20	±00
G CUT	±20	±00
B CUT	±20	±00
R DRIVE	-99~+99	+07
B DRIVE	-99~+99	-21
DC REST	0~3	+01
BLK ST	0~3	±00
GMM PNT	0~3	+01
CD MAT	0~3	+01
RY GAIN	0~1	+01
GY PHAS	0~1	±00
CORING	0~1	+01
CMP CD	0~3	+01
CMP RY	0~1	+01
CMP GY	0~1	±00
CMP COR	0~1	+01

LOW LIGHT MODE

Setting (Adjustment) item	Variable range	Initial setting value
R CUTOFF	0~255	85
G CUTOFF	0~255	85
B CUTOFF	0~255	85

HIGH LIGHT MODE

Setting (Adjustment) item	Variable range	Initial setting value
G DRIVE	0 ~ 255	60
B DRIVE	0 ~ 255	60

RF AFC CHECK MODE

Setting (Adjustment) item	Variable range	Initial setting value
RF AFC	ON / OFF	ON
FINE	FIXED	FIXED (DO NOT ADJUST)

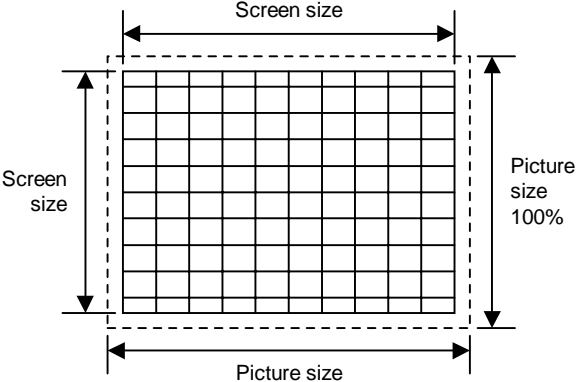
■ ADJUSTMENTS

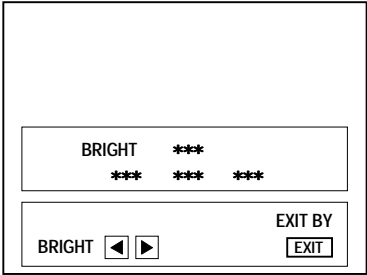
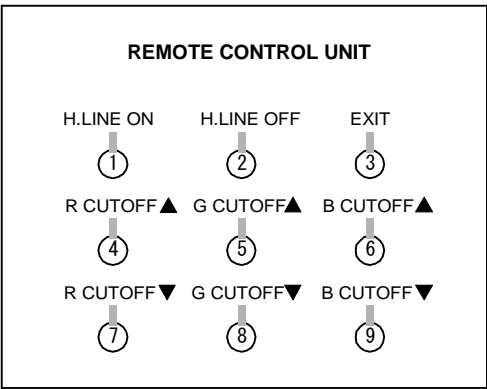
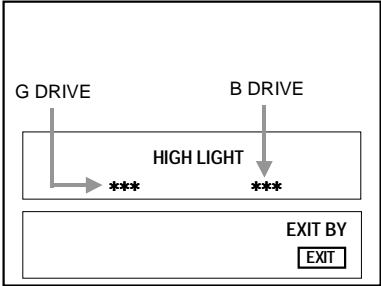
B1 POWER SUPPLY

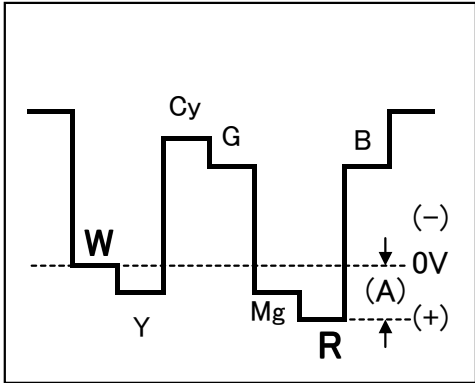
Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 POWER SUPPLY	DC Voltmeter	TP-91 (B1) TP-E(L)		<ol style="list-style-type: none"> 1. Receive a black-and-white signal. 2. Connect the DC Voltmeter to TP-91 (B1) and TP-E(L). +2V 3. Confirm that the voltage is DC134V -2.5V.

ADJUSTMENT OF VIDEO / CHROMA, DEFLECTION CIRCUIT

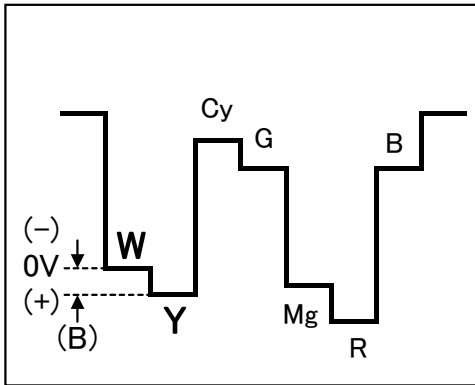
Item	Measuring instrument	Test point	Adjustment part	Description
RF. AGC adjustment			No.52 RF AGC	<ol style="list-style-type: none"> 1. Receive a broadcast. 2. Select "No.52 RF AGC" of the PICTURE MODE. 3. Press the MUTING key and turn off the color. 4. With the MENU LEFT key, get noise in the screen picture. (0 side of setting value) 5. Press the MENU RIGHT key and stop when noise disappears from the screen. 6. Change to other channels and make sure that there is no irregularity. 7. Press the MUTING key and get color out.
FOCUS adjustment	Signal generator		FOCUS VR [In HVT]	<ol style="list-style-type: none"> 1. Receive a crosshatch signal. 2. While looking at the screen, adjust FOCUS VR so that the vertical and horizontal lines will be clear and in fine detail. 3. Make sure that the picture is in focus even when the screen gets darkened.

Item	Measuring instruments	Test point	Adjustment part	Description
<p>V.SIZE Adjustment</p>	<p>Signal generator</p>		<p>No.58 V.SIZE</p>	<ol style="list-style-type: none"> 1. Receive a crosshatch signal. 2. Select No.58 V.SIZE in the PICTURE MODE. 3. Set the initial setting value of No.58 V.SIZE with the LEFT / RIGHT key of the MENU. 4. Adjust No.58 V.SIZE until the vertical screen size becomes the 92%.
				<ol style="list-style-type: none"> 1. Receive a crosshatch signal. 2. Select the No.63 H.POSI of the PICTURE MODE. 3. Set the initial setting value of the No.63 H.POSI with the LEFT / RIGHT key of the MENU. 4. Adjust the No.63 H.POSI until the screen will be horizontally centered.
<p>H.POSITION Adjustment</p>	<p>Signal generator</p>		<p>No.63 H.POSI</p>	<ol style="list-style-type: none"> 1. Receive a crosshatch signal. 2. Select the No.63 H.POSI of the PICTURE MODE. 3. Set the initial setting value of the No.63 H.POSI with the LEFT / RIGHT key of the MENU. 4. Adjust the No.63 H.POSI until the screen will be horizontally centered.

Item	Measuring instruments	Test point	Adjustment part	Description														
<p>WHITE BALANCE (Low Light) Adjustment</p>	<p>Signal generator</p>		<p>BRIGHT</p> <p>R. CUTOFF G. CUTOFF B. CUTOFF</p> <p>SCREEN VR [In HVT]</p>	<ol style="list-style-type: none"> 1. Receive a black-and-white signal.(Color off) 2. Select the LOW LIGHT MODE from the SERVICE MENU. 3. Set the initial setting value of BRIGHT with the LEFT / RIGHT key of the remote control unit. 1. Set the initial setting value of R CUTOFF, G CUTOFF and B CUTOFF with the ④or⑦key(R), ⑤or⑧key(G), ⑥or⑨key(B) of the remote control unit. 5. Display a single horizontal line by pressing the ①key of the remote control unit. 6. Turn the screen VR all the way to the left. 7. Turn the screen VR gradually to the right from the left until either one of the red, blue or green colors appears faintly. 8. Adjust the two colors which did not appear until the single horizontal line that is displayed becomes white using the ④ to ⑨ keys of the remote control unit. 9. Turn the screen VR to where the single horizontal line glows faintly. 10. Press the ② key to return to the regular screen. <p>* The ③ EXIT key is the cancel key for the WHITE BALANCE.</p>														
<p>[LOW LIGHT] MODE</p> 																		
<p>REMOTE CONTROL UNIT</p> 																		
<p>WHITE BALANCE (High Light) Adjustment</p>	<p>Signal generator</p>		<p>G. DRIVE B. DRIVE</p>	<ol style="list-style-type: none"> 1. Receive a monoscope pattern signal. 2. Select the 【HIGH LIGHT】 MODE in the SERVICE MENU. 3. Set the initial setting value of G DRIVE and B DRIVE with the ④, ⑦ and ⑥, ⑨ keys of the remote control unit. 4. Adjust the screen until it becomes white using the ④, ⑦, ⑥ and ⑨ keys of the remote control unit. <p>* The ③ EXIT key is the cancel key for the WHITE BALANCE mode.</p>														
<p>[HIGH LIGHT] MODE</p>																		
																		
<p>Remote Control Unit Key Operation</p> <table border="1" data-bbox="957 1715 1385 2018"> <tr> <td>① key</td> <td>: H.LINE ON</td> </tr> <tr> <td>② key</td> <td>: H.LINE OFF</td> </tr> <tr> <td>③ key</td> <td>: EXIT</td> </tr> <tr> <td>④ key</td> <td>: G DRIVE ▲</td> </tr> <tr> <td>⑦ key</td> <td>: G DRIVE ▼</td> </tr> <tr> <td>⑥ key</td> <td>: B DRIVE ▲</td> </tr> <tr> <td>⑨ key</td> <td>: B DRIVE ▼</td> </tr> </table>					① key	: H.LINE ON	② key	: H.LINE OFF	③ key	: EXIT	④ key	: G DRIVE ▲	⑦ key	: G DRIVE ▼	⑥ key	: B DRIVE ▲	⑨ key	: B DRIVE ▼
① key	: H.LINE ON																	
② key	: H.LINE OFF																	
③ key	: EXIT																	
④ key	: G DRIVE ▲																	
⑦ key	: G DRIVE ▼																	
⑥ key	: B DRIVE ▲																	
⑨ key	: B DRIVE ▼																	

Item	Measuring instruments	Test point	Adjustment part	Description
SUB BRIGHT Adjustment			No.1 BRIGHT	1. Receive a broadcast. 2. Select No.1 BRIGHT of the PICTURE MODE. 3. Set the initial setting value of the No.1 BRIGHT with the LEFT / RIGHT key of the MENU. 4. If the brightness is not best with the initial setting value, make fine adjustment of the No.1 BRIGHT until you get the optimum brightness.
SUB CONTRAST Adjustment			No.2 PICTURE	1. Receive a broadcast. 2. Select No.2 PICTURE of the PICTURE MODE. 3. Set the initial setting value of the No.2 PICTURE with the LEFT / RIGHT key of the MENU. 4. If the contrast is not best with the initial setting value, make fine adjustment of the No.2 PICTURE until you get the optimum contrast.
SUB COLOR adjustment	Signal generator Oscilloscope Remote control unit	TP-R TP-E(↕) [CRT SOCKET PWB]	No.3 COLOR	<p>[Method of adjustment without measuring instrument]</p> 1. Receive a broadcast. 2. Select "No.3 COLOR" of the PICTURE MODE. 3. Set the initial setting value of the "No.3 COLOR" with the LEFT/RIGHT key of the MENU. 4. If the color is not the best with the Initial setting value, make fine adjustment of the "No.3 COLOR" until you get the optimum color.
				<p>[Method of adjustment using measuring instrument]</p> 1. Input the full field color bar signal (75% white). 2. Select "No.3 COLOR" to the PICTURE MODE. 3. Set the initial setting value of the "No.3. COLOR" with the LEFT/RIGHT key of the MENU. 4. Connect the oscilloscope between TP-R and TP-E. 5. Adjust COLOR and bring the value of (A) in the illustration to the voltage +15V (V_{W-R}).

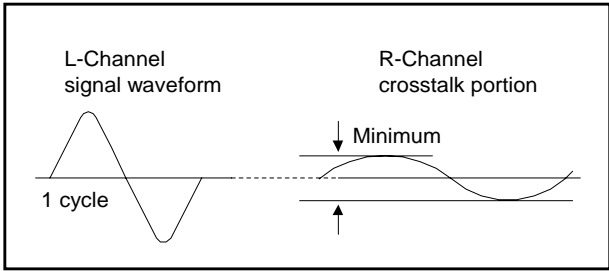
Item	Measuring instruments	Test point	Adjustment part	Description
SUB TINT adjustment	Signal generator Oscilloscope Remote control unit	TP-R TP-E(⚡) [CRT SOCKET PWB]	No.4 TINT	<p>[Method of adjustment without measuring instrument]</p> <ol style="list-style-type: none"> 1. Receive a broadcast. 2. Select "No.4 TINT" of the PICTURE MODE. 3. Set the initial setting value of the "No.4 TINT" with the LEFT/RIGHT key of the MENU. 4. If the tint is not the best with the initial setting value, make fine adjustment of the "No.4 TINT" until you get the optimum tint. <hr/> <p>[Method of adjustment using measuring instrument]</p> <ol style="list-style-type: none"> 1. Input the full field color bar signal (75% white). 2. Select "No.4 TINT" to the PICTURE MODE. 3. Set the initial setting value of the "No.4 TINT" with the LEFT/RIGHT key to the MENU. 4. Connect the oscilloscope between TP-R and TP-E. 5. Adjust TINT and bring the value of (B) in the illustration to the voltage +14V (V_{W-Y}).



ADJUSTMENT OF MTS CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
MTS INPUT LEVEL check			No.1 IN LEVEL	<ol style="list-style-type: none"> 1. Select the "No.1 IN LEVEL" of the SOUND MODE. 2. Verify that the "No.1 IN LEVEL" is set at its initial setting value.
MTS STEREO VCO adjustment	Signal generator Frequency counter	R OUT [AUDIO OUT]	No.2 FH MON. No.3 ST VCO	<ol style="list-style-type: none"> 1. Receive a RF signal (nonmodulated sound signal) from the antenna terminal. 2. Select the "No.2 FH MON." of SOUND MODE, and change the setting value from 0 to 1. 3. Connect the Frequency Counter to R OUT RCA pin of the AUDIO OUT. 4. Select the "No.3 ST VCO". 5. Set the initial setting value of the "No.3 ST VCO" with the LEFT/RIGHT key of the menu. 6. Adjust the "No.3 ST VCO" so that the Frequency Counter will display $15.73\text{kHz} \pm 0.1\text{kHz}$. 7. Select the "No.2 FH MON." of the SOUND MODE, and reset the setting value from 1 to 0.
MTS SAP VCO adjustment	Signal generator Frequency counter	【MPX】 Connector 【4】 pin SDA 【3】 pin GND R OUT [AUDIO OUT]	No.8 5FH MON. No.9 SAP VCO	<ol style="list-style-type: none"> 1. Receive a RF signal (non modulated sound signal) from the antenna terminal. 2. Connect between pin 【4】 of 【MPX】 connector and GND (Pin 【3】 of 【MPX】 connector) through $1\text{M}\Omega$ Resistor. 3. Select the "No.8 5FH MON." of the SOUND MODE, and reset the setting value from 0 to 1. 4. Connect the Frequency Counter to R OUT RCA pin of the AUDIO OUT. 5. Select the "No.9 SAP VCO". 6. Set the initial setting value of "No.9 SAP VCO" with the LEFT/RIGHT key of the menu. 7. Adjust the "No.9 SAP VCO" so that the Frequency Counter will display $78.67\text{kHz} \pm 0.5\text{kHz}$. 8. Select the "No.8 5FH MON." of the SOUND MODE, and reset the setting value from 1 to 0.

Item	Measuring instrument	Test point	Adjustment part	Description
MTS FILTER check			No.5 FILTER	<ol style="list-style-type: none"> 1. Select the "No.5 FILTER" of the SOUND MODE. 2. Verify that the "No.5 FILTER" is set at its initial setting value.
MTS SEPARATION adjustment	TV audio multiplex signal generator Oscilloscope	L OUT R OUT [AUDIO OUT]	No.6 LOW SEP. No.7 HI SEP.	<ol style="list-style-type: none"> 1. Input a stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal. 2. Connect an oscilloscope to L OUT RCA pin of the AUDIO OUT, and display one cycle portion of the 300Hz signal. 3. Change the connection of the oscilloscope to R OUT RCA pin of the AUDIO OUT, and enlarge the voltage axis. 4. Select the "No.6 LOW SEP." of the SOUND MODE. 5. Set the initial setting value of the "No.6 LOW SEP." with the LEFT/RIGHT key of the menu. 6. Adjust the "No.6 LOW SEP." so that the stroke element of the 300Hz signal will become minimum. 7. Change the signal to 3kHz, and similarly adjust the "No.7 HI SEP.".



HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing the high voltage hold down circuit shown in Fig. 1.
This circuit shall be checked to operate correctly.

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT

- (1) Turn the power switch to on.
- (2) As shown in Fig. 1, set the resistor between X connector 1 and 3 .
- (3) Make sure that the screen picture disappears.
- (4) Temporarily unplug the power plug.
- (5) Remove the resistor replaced X connector 1 and 3 .
- (6) Again plug the power plug, make sure that the normal picture is displayed on the screen.

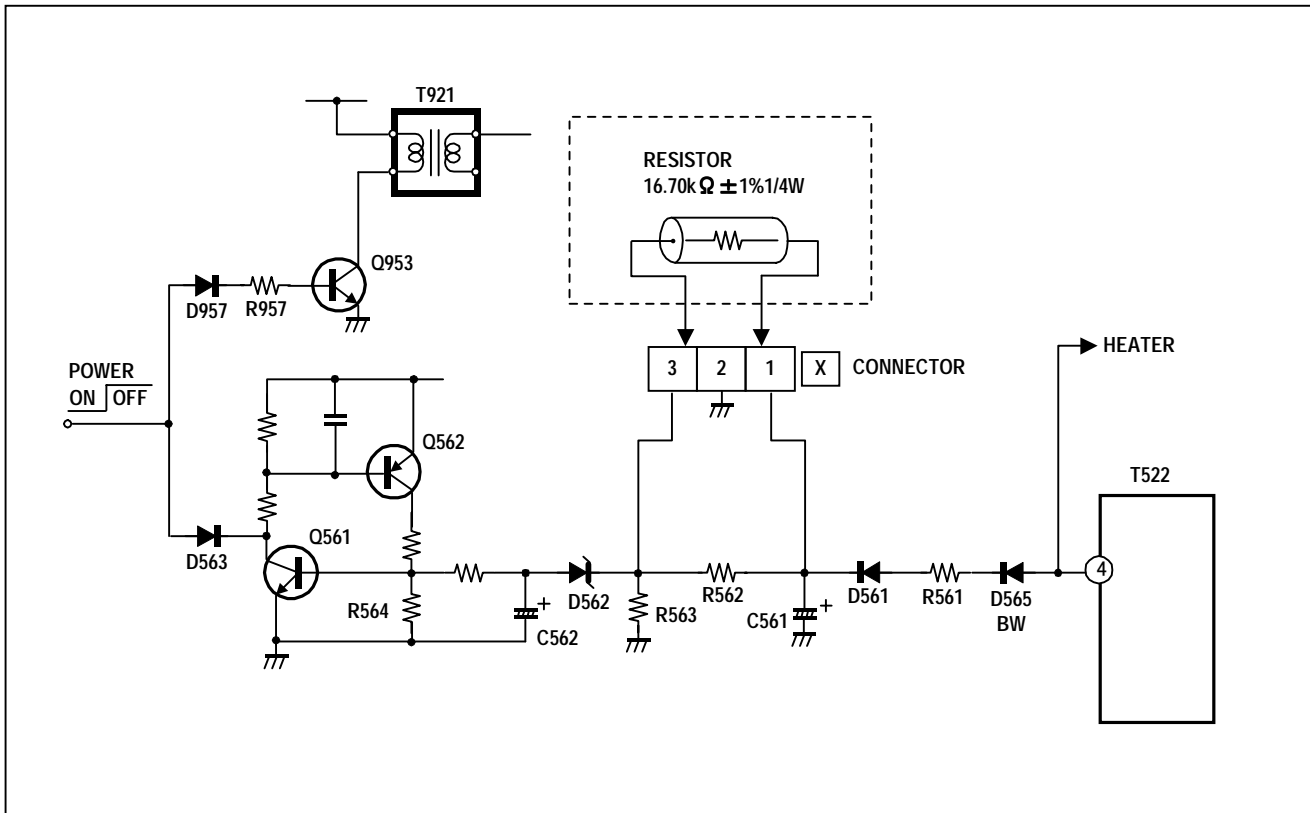


Fig. 1

SELF CHECK FUNCTIONS

1. Outline

This model has self check functions given below. When a malfunction has been detected, the POWER is turned off and the LED flashes to inform of the failure . The malfunction is detected by the signal input state of the control line connected to the microcomputer.

2. Self check items

Check item	Details of detection	Method of detection	State of malfunction
CRT NECK protector Also detected if the power supply line output from the HVT (High voltage Transformer) has shorted with the ground.	When the vertical circuit S-correction capacitor C427 is shorted, detect the potential drop of the C427, and prevent the burn damage to the CRT NECK. (Grounding of shorting of the power supply output from the HVT to the vertical circuit, and the small signal power supply is also detected.)	The microcomputer detects at 1 second intervals. If NG is detected for more than 1 ms, a malfunction is interpreted.	When a malfunction has been detected, the POWER is turned off. While the POWER is being turned off , the power key of the remote controller is not operational until the power code is taken out and put in again.

3. Self check indicating function

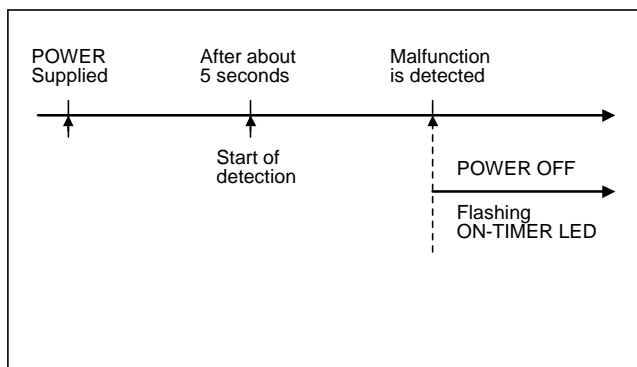
The self-check function begins detection about 5 seconds after power is supplied.

In the event a malfunction is detected, the power is cut off immediately.

At this time, the ON-TIMER LED flashes to inform of the malfunction.

[ON-TIMER LED indication]

The ON-TIMER LED flashes at 0.5 seconds intervals.



REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

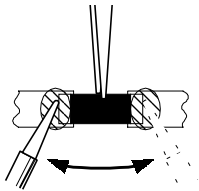
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

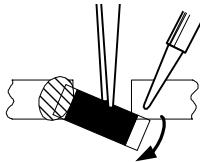
1. How to remove Chip parts

◆ Resistors, capacitors, etc.

- (1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

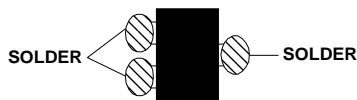


- (2) Shift with tweezers and remove the chip part.

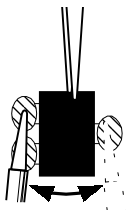


◆ Transistors, diodes, variable resistors, etc.

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

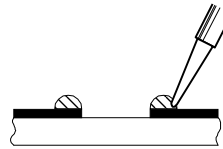


Note : After removing the part, remove remaining solder from the pattern.

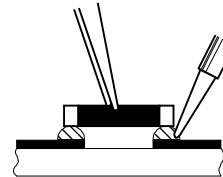
2. How to install Chip parts

◆ Resistors, capacitors, etc.

- (1) Apply solder to the pattern as indicated in the figure.

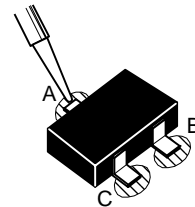


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

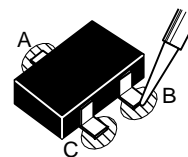


◆ Transistors, diodes, variable resistors, etc.

- (1) Apply solder to the pattern as indicated in the figure.
- (2) Grasp the chip part with tweezers and place it on the solder.
- (3) First solder lead **A** as indicated in the figure.



- (4) Then solder leads **B** and **C**.



JVC SERVICE & ENGINEERING COMPANY OF AMERICA

DIVISION OF JVC AMERICAS CORP.

Head office :	1700 Valley Road, Wayne, New Jersey 07470	(973)315-5000
East Coast :	10 New Maple Avenue, Pine Brook, New Jersey 07058	(973)396-1000
Midwest :	705 Enterprise St. Aurora, Illinois 60504	(630)851-7855
West Coast :	5665 Corporate Avenue, Cypress, California 90630	(714)229-8011
Southwest :	10700 Hammerly, Suite 105, Houston, Texas 77043	(713)935-9331
Hawaii :	2969 Mapunapuna Place, Honolulu, Hawaii 96819	(808)833-5828
Southeast :	1500 Lakes Parkway, Lawrenceville, Georgia 30243	(770)339-2582

JVC CANADA INC.

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SERVICE MANUAL

COLOR TELEVISION

BASIC CHASSIS

FD

AV-20D202_{IS}

Supplementary

Since some details of the AV-20D202/s service manual (No.51789 Apr. 2001) were incorrect, we are informing you of these errors and of the correct descriptions.

■ CORRECTED ITEMS (Cover Page)

<p>INCORRECT</p>	
<p>CORRECT</p>	

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Southwest :	10700 Hammerly, Suite 105, Houston, Texas 77043	(713)935-9331
Hawaii :	2969 Mapunapuna Place, Honolulu, Hawaii 96819	(808)833-5828
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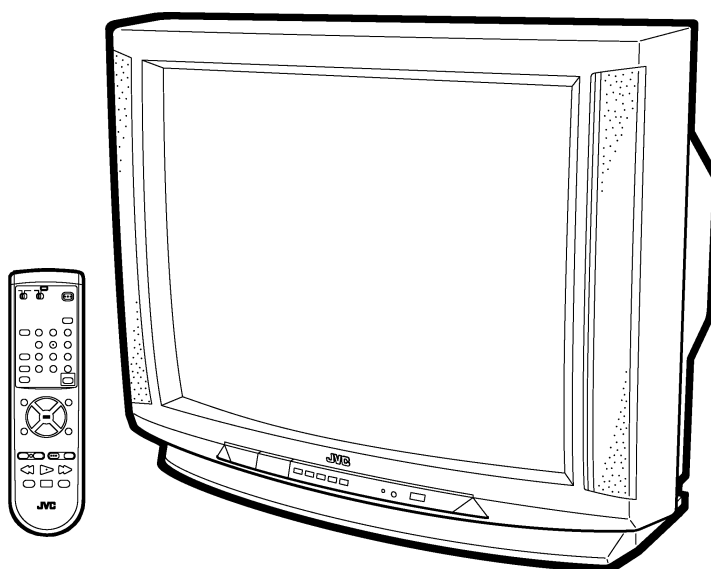
SCHEMATIC DIAGRAMS

COLOR TELEVISION

AV-20D202/S

BASIC CHASSIS
FD

CD-ROM No.SML200104



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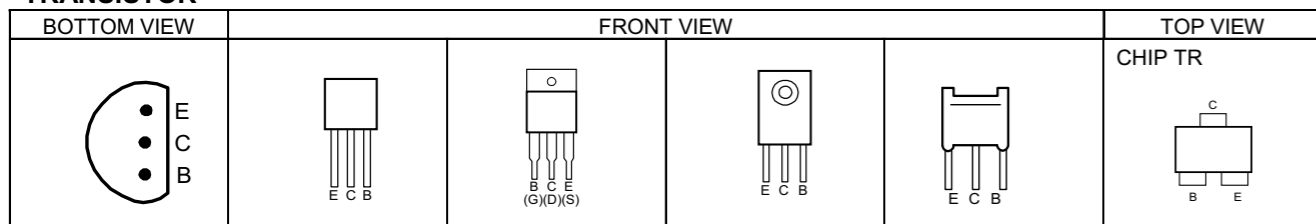
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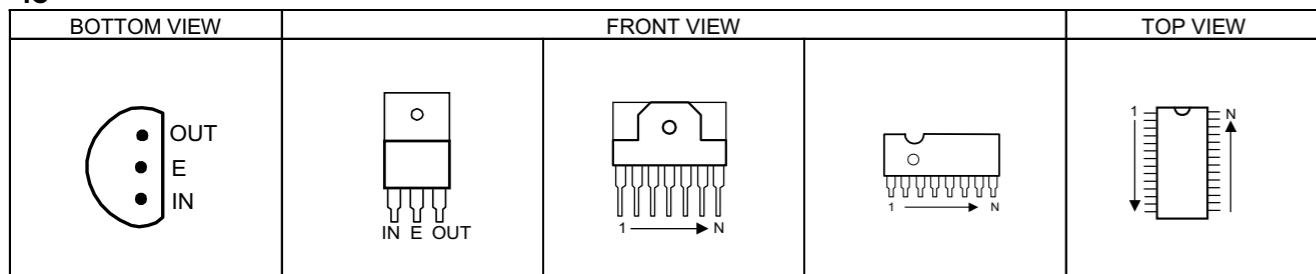
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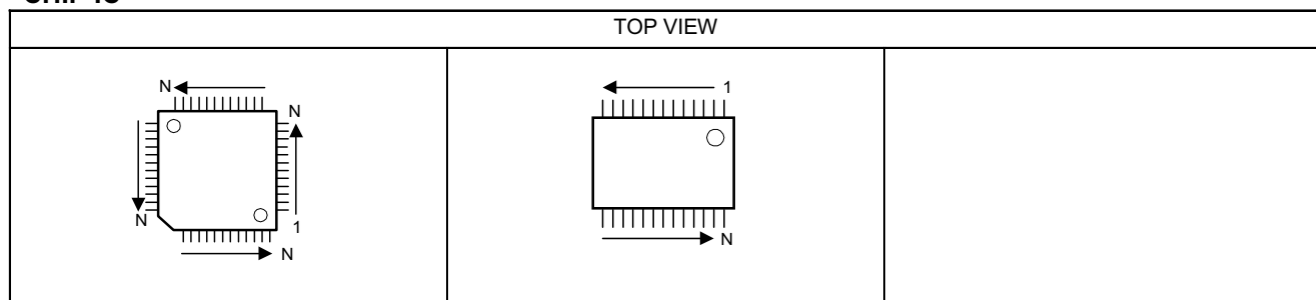
TRANSISTOR



IC



CHIP IC



STANDARD CIRCUIT DIAGRAM

NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the Δ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1)Input signal : Color bar signal
 - (2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
 - (3)Internal resistance of tester :DC 20k Ω /V
 - (4)Oscilloscope sweeping time :H \Rightarrow 20 μ S/div
:V \Rightarrow 5mS/div
:Others \Rightarrow Sweeping time is specified
 - (5)Voltage values :All DC voltage values
- * Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

●In the PW board :R1209 \rightarrow R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

●Resistance value

- No unit :[Ω]
- K :[K Ω]
- M :[M Ω]

●Rated allowable power

- No indication :1/16[W]
- Others :As specified

●Type

- No indication :Carbon resistor
- OMR :Oxide metal film resistor
- MFR :Metal film resistor
- MPR :Metal plate resistor
- UNFR :Uninflammable resistor
- FR :Fusible resistor

*Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

●Capacitance value

- 1 or higher :[pF]
- less than 1 :[μ F]

●Withstand voltage

- No indication :DC50[V]
- AC indicated :AC withstand voltage [V]
- Others :DC withstand voltage [V]

*Electrolytic Capacitors

47/50[Example]:Capacitance value [μ F]/withstand voltage[V]

●Type

- No indication :Ceramic capacitor
- MY :Mylar capacitor
- MM :Metalized mylar capacitor
- PP :Polypropylene capacitor
- MPP :Metalized polypropylene capacitor
- MF :Metalized film capacitor
- TF :Thin film capacitor
- BP :Bipolar electrolytic capacitor
- TAN :Tantalum capacitor

(3)Coils

- No unit :[μ H]
- Others :As specified

(4)Power Supply

- :B1
- :9V
- :5V

*Respective voltage values are indicated

(5)Test point

- :Test point
- :Only test point display

(6)Connecting method

- :Connector
- :Wrapping or soldering
- :Receptacle

(7)Ground symbol

- :LIVE side ground
- :ISOLATED(NEUTRAL) side ground
- :EARTH ground
- :DIGITAL ground

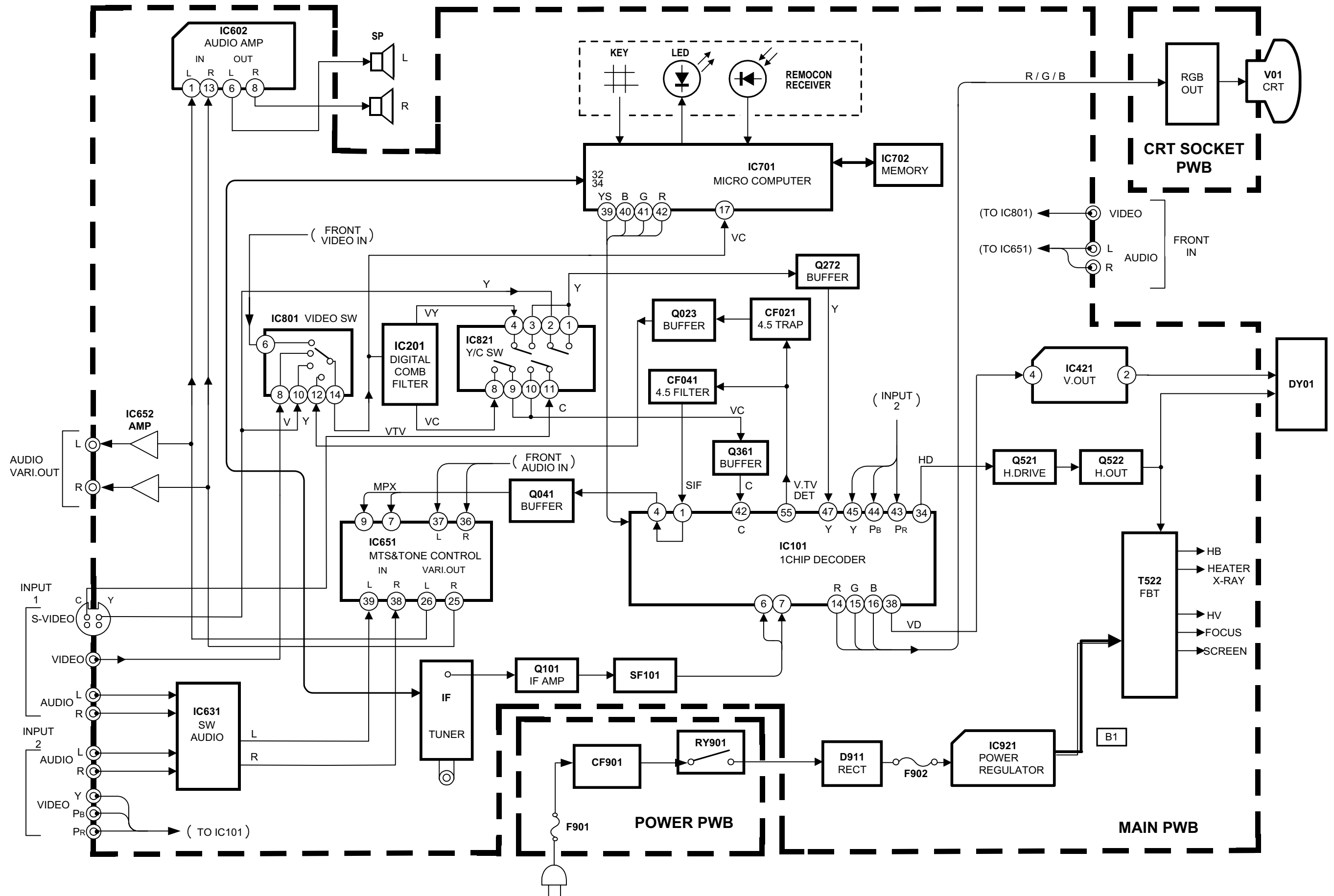
5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (\perp) side GND and the ISOLATED(NEUTRAL) : (⏏) side GND. Therefore, care must be taken for the following points.

- (1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

BLOCK DIAGRAM

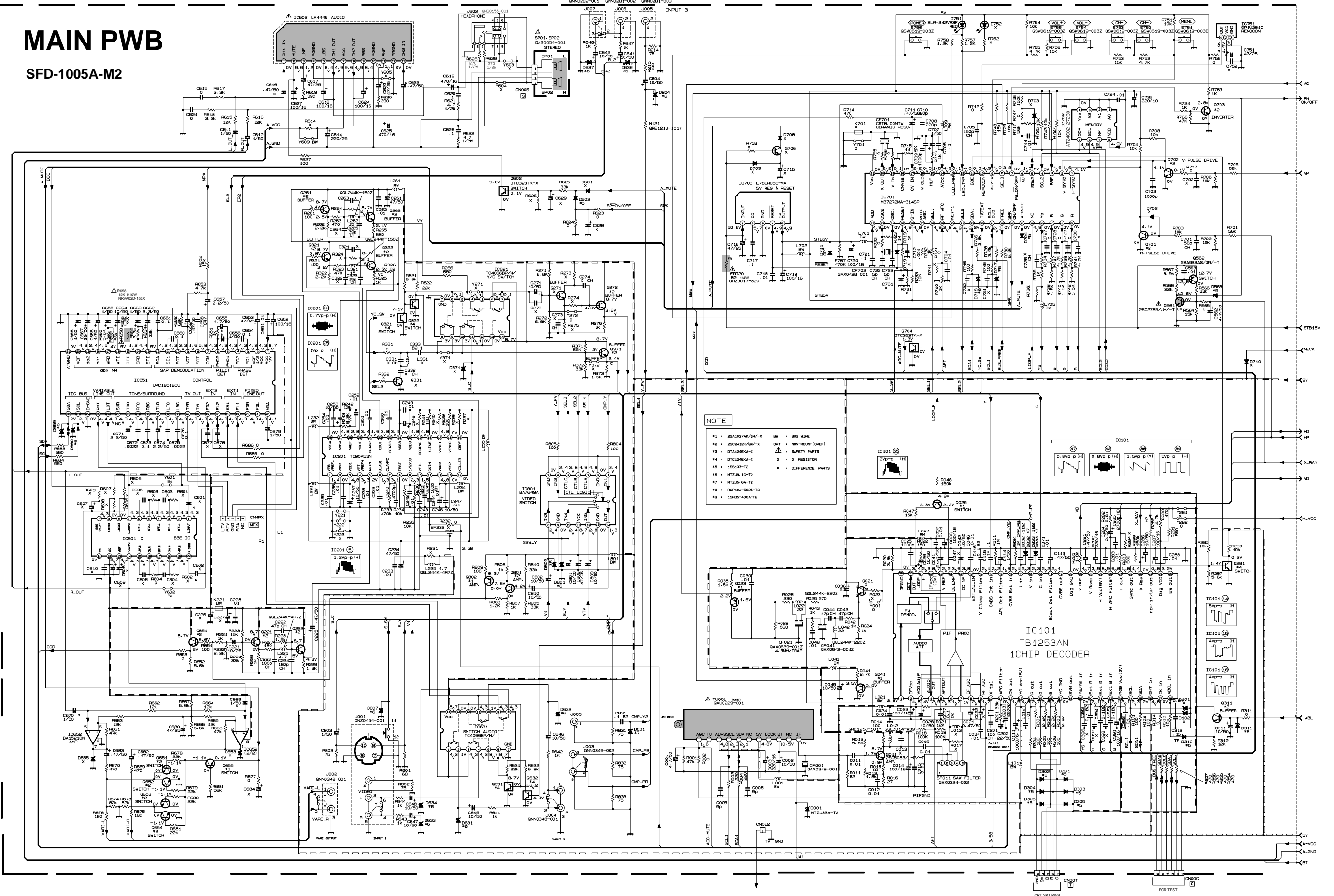


CIRCUIT DIAGRAMS MAIN PWB CIRCUIT DIAGRAM

NOTE

For the parts marked " * " in the circuit diagram, refer to the parts list.

MAIN PWB
SFD-1005A-M2



NOTE

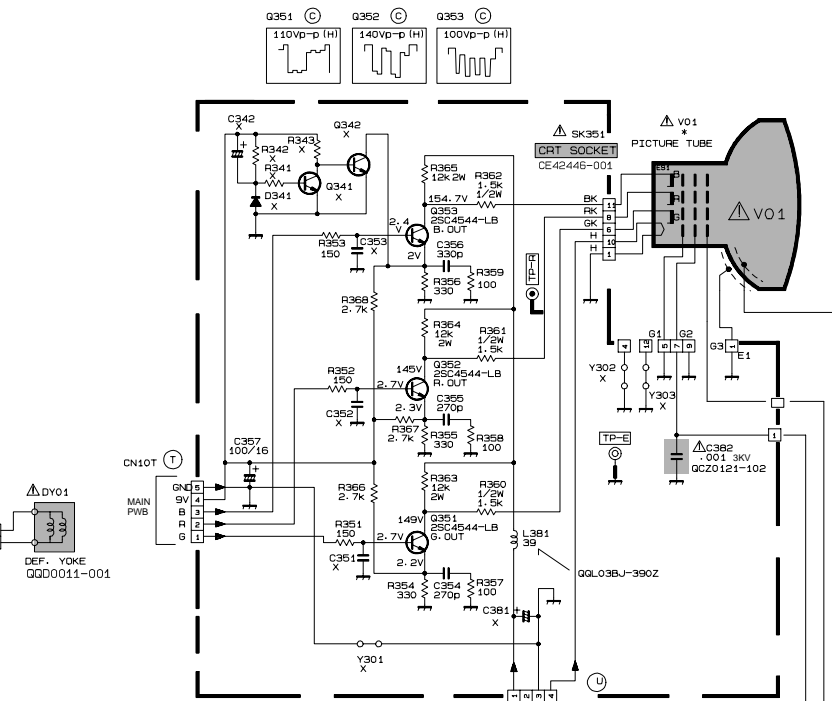
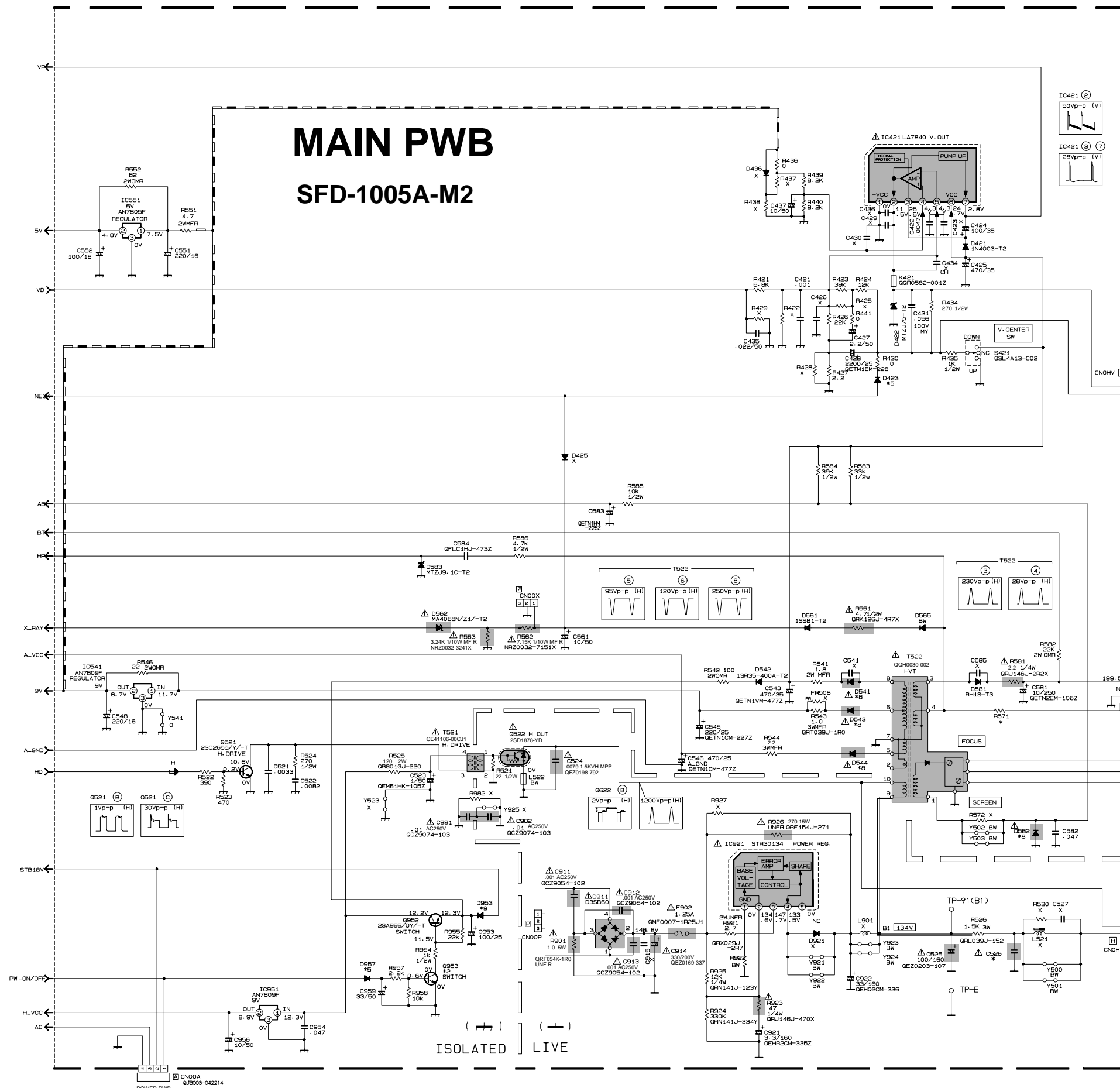
- * 1. 2SA1037AK/GA-X BW - BUS WIRE
- * 2. 2SC2412K/GA-X OPT - NON-MOUNT (OPEN)
- * 3. DTA124EX-X OPT - SAFETY PARTS
- * 4. DTC124EX-X OPT - RESISTOR
- * 5. 1S8133-T2 OPT - DIFFERENCE PARTS
- * 6. MTZJ9-1C-T2
- * 7. MTZJ9-6A-T2
- * 8. RGP10J-5025-T3
- * 9. 19R89-60A-T2

IC101
TB1253AN
1CHIP DECODER

MAIN PWB, CRT SOCKET PWB CIRCUIT DIAGRAM

NOTE

For the parts marked " * " in the circuit diagram, refer to the parts list.



CRT SOCKET PWB (Within MAIN PWB) SFD-1005A-M2

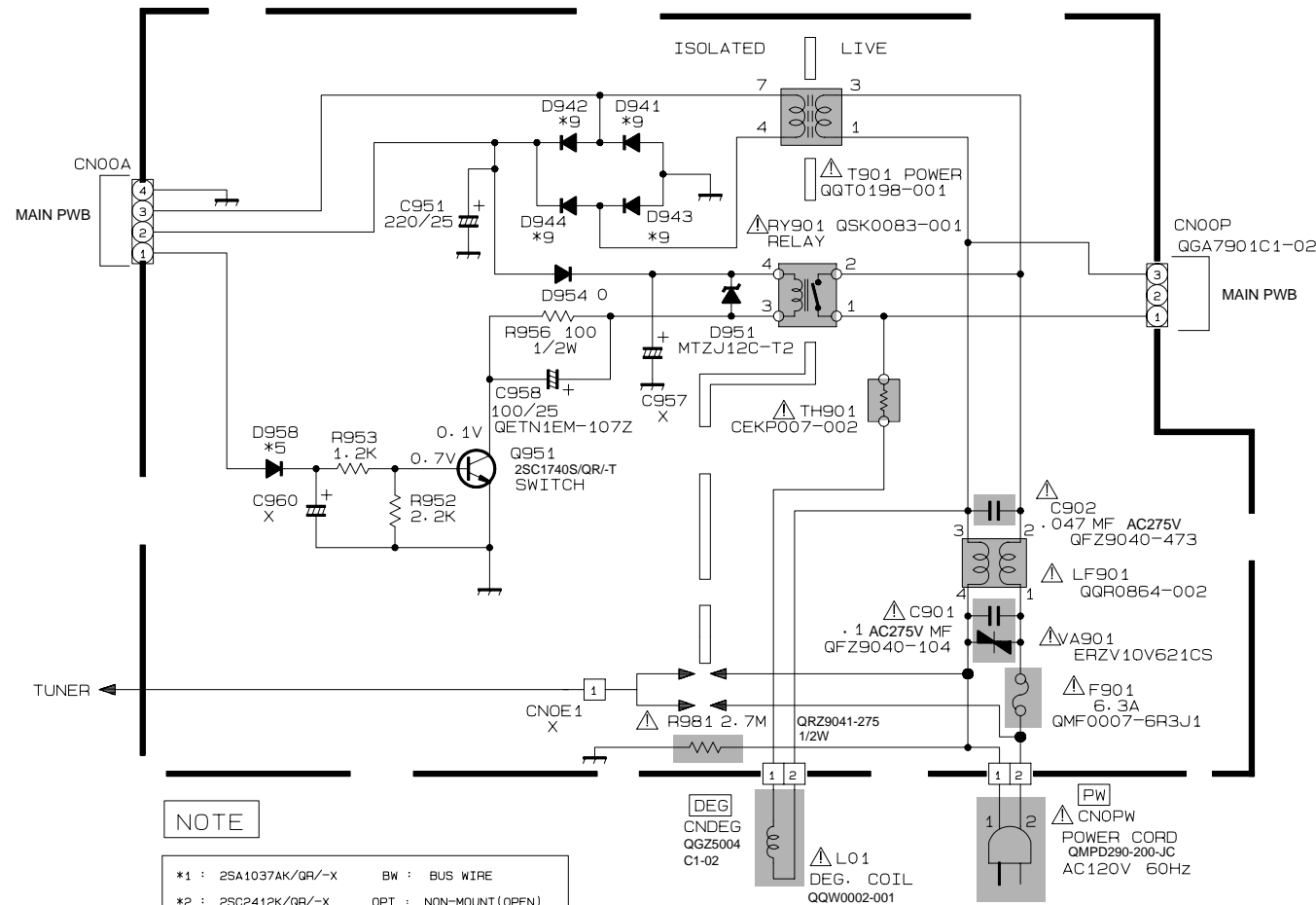
NOTE

*1	: 2SA1037AK/GR/-X	BW	: BUS WIRE
*2	: 2SC2412K/GR/-X	OPT	: NON-MOUNT (OPEN)
*3	: DTA124EKA-X	△	: SAFETY PARTS
*4	: DTC124EKA-X	0	: 0 RESISTOR
*5	: 1SS133-T2	*	: DIFFERENCE PARTS
*6	: MTZJ5.1C-T2		
*7	: MTZJ5.6A-T2		
*8	: RGP10J-5025-T3		
*9	: 1SR35-400A-T2		

POWER PWB CIRCUIT DIAGRAM

NOTE

●For the parts marked “ * ” in the circuit diagram, refer to the parts list.



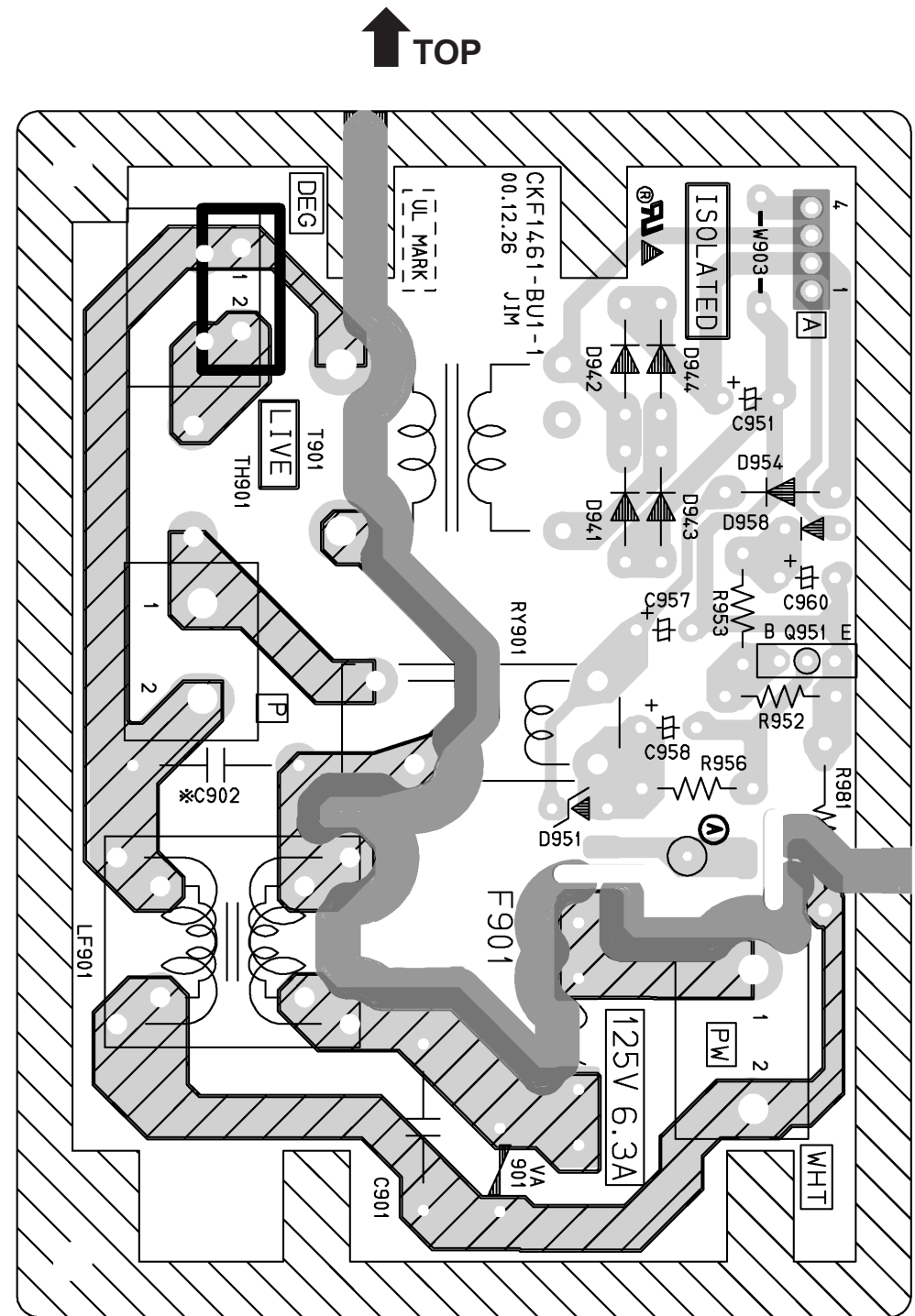
NOTE

- | | |
|----------------------|------------------------|
| *1 : 2SA1037AK/QR/-X | BW : BUS WIRE |
| *2 : 2SC2412K/QR/-X | OPT : NON-MOUNT (OPEN) |
| *3 : DTA124EKA-X | △ : SAFETY PARTS |
| *4 : DTC124EKA-X | 0 : 0* RESISTOR |
| *5 : 1SS133-T2 | * : DIFFERENCE PARTS |
| *6 : MTZJ9.1C-T2 | |
| *7 : MTZJ5.6A-T2 | |
| *8 : RGP10J-5025-T3 | |
| *9 : 1SR35-400A-T2 | |

**POWER PWB
SFD-9002A-M2**

PATTERN DIAGRAMS

POWER PWB PATTERN



MAIN PWB, CRT SOCKET PWB PATTERN



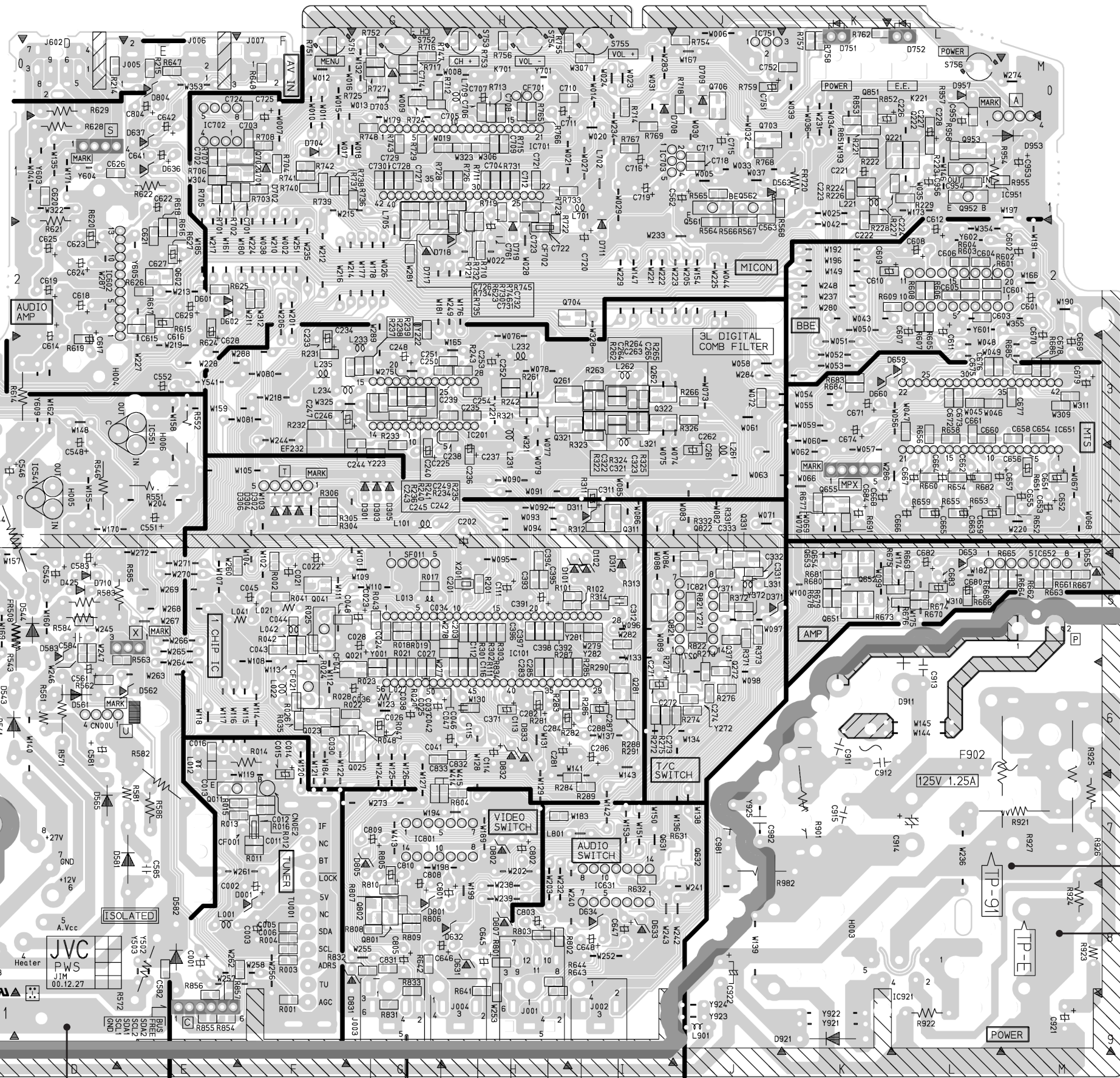
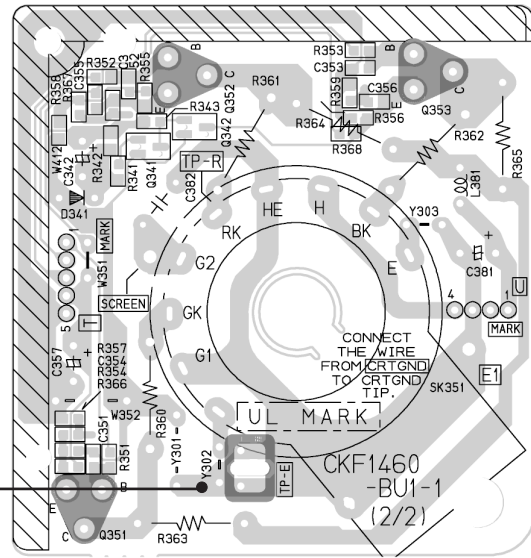
CAUTION : FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S) AND ROHM'S MFR'D TYPE CP(S): OR EQUIVALENT

CRT SOCKET PWB ASS'Y

FRONT

MAIN PWB ASS'Y

TOP



TP-91 (B1)
TPE (T)

CHANNEL CHART (US)

MODE		BAND	CHANNEL		TUNER BAND			
TV	CATV		REAL	DISP.				
○	○	VL	02	I				
			03					
			04					
			05					
			06					
			07					
	○	VH	08	II				
			09					
			10					
			11					
			12					
			13					
			x		○	MID	A 14	I
B 15								
C 16								
D 17								
E 18								
F 19								
G 20								
H 21								
I 22								
○	SUPER	J 23		II				
		K 24						
		L 25						
		M 26						
		N 27						
		O 28						
		P 29						
		Q 30						
		R 31						
		S 32						
		T 33						
		U 34						
		V 35						
		W 36						
		○			○	HYPER	W+1 37	IV
							W+2 38	
							W+3 39	
							W+4 40	
W+5 41								
W+6 42								
W+7 43								
W+8 44								
W+9 45								
W+10 46								
W+11 47								
W+12 48								
W+13 49								
W+14 50								
W+15 51								
W+16 52								
W+17 53								
W+18 54								
W+19 55								
W+20 56								
W+21 57								
W+22 58								
W+23 59								
W+24 60								
W+25 61								
W+26 62								
W+27 63								
W+28 64								
○	○	ULTRA	W+29 65	IV				
			W+30 66					
			W+31 67					
			W+32 68					
			W+33 69					
			W+34 70					

MODE		BAND	CHANNEL		TUNER BAND			
TV	CATV		REAL	DISP.				
x	○	ULTRA	W+35 71	IV				
			W+36 72					
			W+37 73					
			W+38 74					
			W+39 75					
			W+40 76					
			W+41 77					
			W+42 78					
			W+43 79					
			W+44 80					
			W+45 81					
			W+46 82					
			W+47 83					
			W+48 84					
			W+49 85					
			W+50 86					
			W+51 87					
			W+52 88					
			W+53 89					
			W+54 90					
			W+55 91					
			W+56 92					
			W+57 93					
			W+58 94					
			W+59 100					
○	x	SUB MID	A-8 01	I				
			A-4 96					
			A-3 97					
			A-2 98					
			A-1 99					
			○		x	UHF	14 } 69	IV
			TOTAL 180CH { VHF 124CH UHF 56CH					
			NOTE: TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES. SPECIAL ADAPTERS MAY BE REQUIRED.					

CHANNEL CHART (CA)

MODE		BAND	CHANNEL		TUNER BAND			
TV	CATV		REAL	DISP.				
○	○	VL	02	I				
			03					
			04					
			05					
			06					
			07					
	○	VH	08	II				
			09					
			10					
			11					
			12					
			13					
			x		○	MID	A 14	II
B 15								
C 16								
D 17								
E 18								
F 19								
G 20								
H 21								
I 22								
○	SUPER	J 23		III				
		K 24						
		L 25						
		M 26						
		N 27						
		O 28						
		P 29						
		Q 30						
		R 31						
		S 32						
		T 33						
		U 34						
		V 35						
		W 36						
		○			○	HYPER	W+1 37	III
							W+2 38	
							W+3 39	
							W+4 40	
W+5 41								
W+6 42								
W+7 43								
W+8 44								
W+9 45								
W+10 46								
W+11 47								
W+12 48								
W+13 49								
W+14 50								
W+15 51								
W+16 52								
W+17 53								
W+18 54								
W+19 55								
W+20 56								
W+21 57								
W+22 58								
W+23 59								
W+24 60								
W+25 61								
W+26 62								
W+27 63								
W+28 64								
○	○	ULTRA	W+29 65	IV				
			W+30 66					
			W+31 67					
			W+32 68					
			W+33 69					
			W+34 70					

MODE		BAND	CHANNEL		TUNER BAND			
TV	CATV		REAL	DISP.				
x	○	ULTRA	W+35 71	IV				
			W+36 72					
			W+37 73					
			W+38 74					
			W+39 75					
			W+40 76					
			W+41 77					
			W+42 78					
			W+43 79					
			W+44 80					
			W+45 81					
			W+46 82					
			W+47 83					
			W+48 84					
			W+49 85					
			W+50 86					
			W+51 87					
			W+52 88					
			W+53 89					
			W+54 90					
			W+55 91					
			W+56 92					
			W+57 93					
			W+58 94					
			W+59 100					
○	x	SUB MID	A-8 01	I				
			A-4 96					
			A-3 97					
			A-2 98					
			A-1 99					
			○		x	UHF	14 } 69	IV
			TOTAL 180CH { VHF 124CH UHF 56CH					
			NOTE: TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES. SPECIAL ADAPTERS MAY BE REQUIRED.					

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Vancouver :	13040 Worster Court Richmond B.C. V6V 2B3	(604)270-1311

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PARTS LIST

CAUTION

- The parts identified by the \triangle symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines — in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

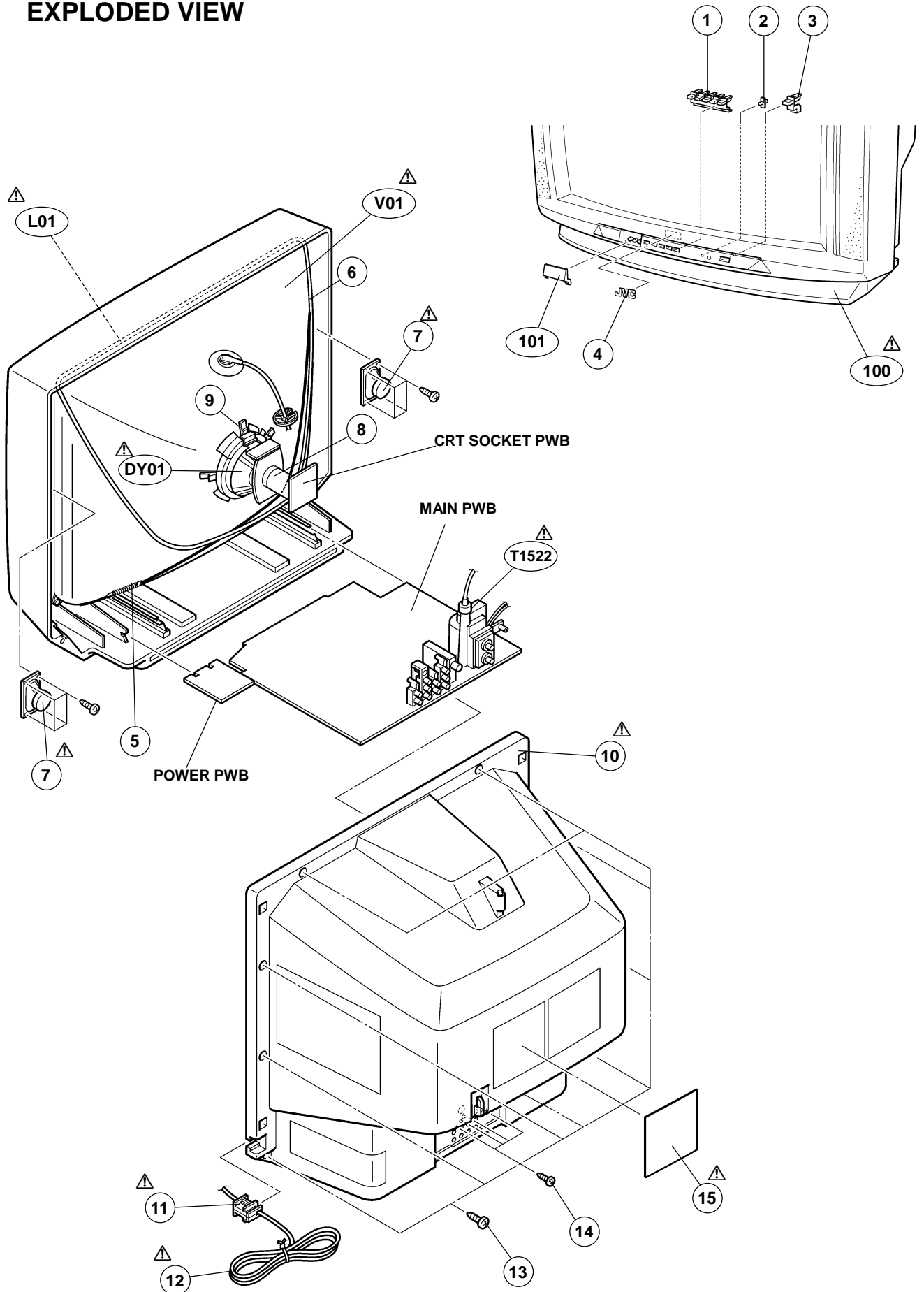
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- REMOTE CONTROL UNIT PARTS LIST 37
- PACKING 38
- PACKING PARTS LIST 38

EXPLODED VIEW PARTS LIST

△ Ref.No.	Part No.	Part Name	Description
△ V01	A51KRE89X(DT)	PICTURE TUBE(C)	
△ L01	QQW0002-001	DEG.COIL	
△ DY01	QQD0011-001	DEF YOKE	
△ T1522	QQH0030-002	H.V.TRANSF.	
1	GQ30025-002A-A	CONTROL KNOB	
2	LC30191-004A-A	REMOCON LENS	
3	GQ30026-002A-A	POWER KNOB	
4	CM43094-009-H	JVC MARK	
5	A48457-4-S	SPRING	
6	CHGB0016-0H	BRAIDED WIRE	
△ 7	QAS0054-001	SPEAKER	(×2) SP01,02
8	CE42378-00B	P.C.MAGNET	
9	CE42153-00AJ1	WEDGE ASSY	(×4)
△ 10	GQ10013-001A-A	REAR COVER	
△ 11	LC20106-001D-A	CORD CLAMP	
△ 12	QMPD290-200-JC	POWER CORD	
13	QYSBSFG4016Z	TAPPING SCREW	(×9)
14	QYSBSB3010Z	TAPPING SCREW	(×4)
△ 15	LC31139-001A-A	RATING LABEL	
△ 100	GQ10020-001A-A	FRONT CABI.ASSY	Inc.No.101
101	GQ30024-002A-A	DOOR	

EXPLODED VIEW



△ Symbol No.	Part No.	Part Name	Description
COIL			
L1012	QQL2014-R39	PEAKING COIL	
L1022	QQL244K-220Z	PEAKING COIL	
L1042	QQL244K-220Z	PEAKING COIL	
L1221	QQL244K-4R7Z	COIL	4.7μH K
L1235	QQL244K-4R7Z	COIL	4.7μH K
L1262	QQL244K-150Z	COIL	15μH K
L1321	QQL244K-150Z	COIL	15μH K
L1381	QQL03BJ-390Z	COIL	39μH J
DIODE			
D1001	MTZJ33A-T2	ZENER DIODE	
D1021	MTZJ9.1C-T2	ZENER DIODE	
D1301-06	1SS133-T2	SI. DIODE	
D1311	MTZJ9.1C-T2	ZENER DIODE	
D1312	1SS133-T2	SI. DIODE	
D1421	1N4003-T2	SI. DIODE	
D1422	MTZJ75-T2	ZENER DIODE	
D1423	1SS133-T2	SI. DIODE	
△ D1541	RGP10J-5025-T3	SI. DIODE	
D1542	1SR35-400A-T2	SI. DIODE	
△ D1543	RGP10J-5025-T3	SI. DIODE	
△ D1544	RGP10J-5025-T3	SI. DIODE	
D1561	1SS81-T2	SI. DIODE	
△ D1562	MA4068N/Z1/-T2	ZENER DIODE	
D1563	1SS133-T2	SI. DIODE	
D1581	RH15-T3	SI. DIODE	
△ D1582	RGP10J-5025-T3	SI. DIODE	
D1583	MTZJ9.1C-T2	ZENER DIODE	
D1602	1SS133-T2	SI. DIODE	
D1631-34	MTZJ9.1C-T2	ZENER DIODE	
D1636-37	MTZJ9.1C-T2	ZENER DIODE	
D1659-60	MTZJ9.1C-T2	ZENER DIODE	
D1704	1SS133-T2	SI. DIODE	
D1717-18	MTZJ9.1C-T2	ZENER DIODE	
D1751	SLR-342VR3F	L. E. D.	
D1801-02	MTZJ9.1C-T2	ZENER DIODE	
D1804-05	MTZJ9.1C-T2	ZENER DIODE	
D1807	MTZJ9.1C-T2	ZENER DIODE	
D1831-33	MTZJ5.6A-T2	ZENER DIODE	
△ D1911	D3SB60	BRIDGE DIODE	
D1953	1SR35-400A-T2	SI. DIODE	
D1957	1SS133-T2	SI. DIODE	
TRANSISTOR			
Q1011	2SC5083/L-P/-T	SI. TRANSISTOR	
Q1023	2SA1037AK/QR/-X	SI. TRANSISTOR	
Q1025	2SA1037AK/QR/-X	SI. TRANSISTOR	
Q1041	2SA1037AK/QR/-X	SI. TRANSISTOR	
Q1221-22	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1261-62	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1272	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1281	DTC124EKA-X	DIGI. TRANSISTOR	
Q1311	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1321-22	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1351-53	2SC4544-LB	SI. TRANSISTOR	
Q1371	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1521	2SC2655/Y/-T	SI. TRANSISTOR	
△ Q1522	2SD1878-YD	SI. TRANSISTOR	H. OUT
△ Q1561	2SC2785/JH/-T	SI. TRANSISTOR	
Q1562	2SA933AS/QR/-T	SI. TRANSISTOR	
Q1602	DTC323TK-X	DIGI. TRANSISTOR	
Q1631-32	DTC124EKA-X	DIGI. TRANSISTOR	
Q1651-54	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1655	2SA1037AK/QR/-X	SI. TRANSISTOR	
Q1701-03	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1704	DTC323TK-X	DIGI. TRANSISTOR	
Q1801	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1802	2SA1037AK/QR/-X	SI. TRANSISTOR	
Q1821-22	DTC124EKA-X	DIGI. TRANSISTOR	
Q1851	2SC2412K/QR/-X	SI. TRANSISTOR	
Q1952	2SA966/OY/-T	SI. TRANSISTOR	
Q1953	2SC2412K/QR/-X	SI. TRANSISTOR	

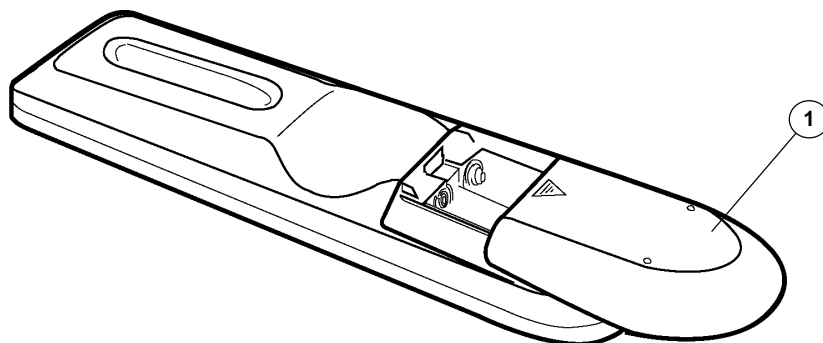
△ Symbol No.	Part No.	Part Name	Description
IC			
IC1101	TB1253AN	I.C. (M)	
IC1201	TC90A53N	I.C. (DIGI-MOS)	
△ IC1421	LA7840	I.C. (MONO-ANA)	
IC1541	AN7809F	I.C. (MONO-ANA)	
IC1551	AN7805F	I.C. (MONO-ANA)	
△ IC1602	LA4446	I.C. (MONO-ANA)	
IC1631	TC4066BP/N/	I.C. (DIGI-MOS)	
IC1651	UPC1851BCU	I.C. (MONO-ANA)	
IC1652	BA15218N	I.C. (MONO-ANA)	
IC1701	M37272MA-3145P	I.C. (MICRO-COMP)	
IC1702	AT24C02-27230	I.C.	(SERVICE)
IC1703	L78LR05E-MA	I.C. (MONO-ANA)	
IC1751	GP1U281Q	IFR DETECT UNIT	
IC1801	BA7649A	I.C. (MONO-ANA)	
IC1821	TC4066BP/N/	I.C. (DIGI-MOS)	
△ IC1921	STR30134	I.C. (H)	
IC1951	AN7809F	I.C. (MONO-ANA)	
OTHERS			
CF1001	LC30190-001B-A	L. E. D. HOLDER	
CF1021	QAX0349-001	CERAMIC FILTER	
CF1041	QAX0639-001Z	CERAMIC FILTER	
CF1701	QAX0642-001Z	CERAMIC FILTER	
CF1702	CST8.00MTW	CER. RESONATOR	
CL1001	QAX0428-001	CER. RESONATOR	
CL1002	QZW0028-002	WIRE CLAMP	
△ F1902	QZW0028-001	WIRE CLAMP	
	QMF0007-1R25J1	FUSE	1.25A
△ FC1902	CEMG002-001Z	FUSE CLIP	(x2)
△ FR1720	QRZ9017-820	F. R	82 Ω 1/4W J
J1001	QNZ0454-001	PIN JACK	
J1002	QNN0348-001	PIN JACK	
J1003	QNN0349-002	PIN JACK	
J1004	QNN0348-001	PIN JACK	
J1005	QNN0281-003	PIN JACK	
J1006	QNN0281-002	PIN JACK	
J1007	QNN0282-001	PIN JACK	
J1602	QNS0155-001	JACK	
K1421	QQR0582-001Z	BEADS CORE	
S1421	QSL4A13-C02	LEVER SWITCH	V. CENTER SW
S1751	QSW0619-003Z	PUSH SWITCH	MENU
S1752	QSW0619-003Z	PUSH SWITCH	CH-
S1753	QSW0619-003Z	PUSH SWITCH	CH+
S1754	QSW0619-003Z	PUSH SWITCH	VOL-
S1755	QSW0619-003Z	PUSH SWITCH	VOL+
S1756	QSW0619-003Z	PUSH SWITCH	POWER
SF1011	QAX0324-002	SAW FILTER	
△ SK1351	CE42446-001	C. R. T. SOCKET	
△ TU1001	QAU0229-001	TUNER	
X1201	CE40668-001Z	CRYSTAL	

POWER P.W. BOARD ASS'Y (SFD-9002A-M2)

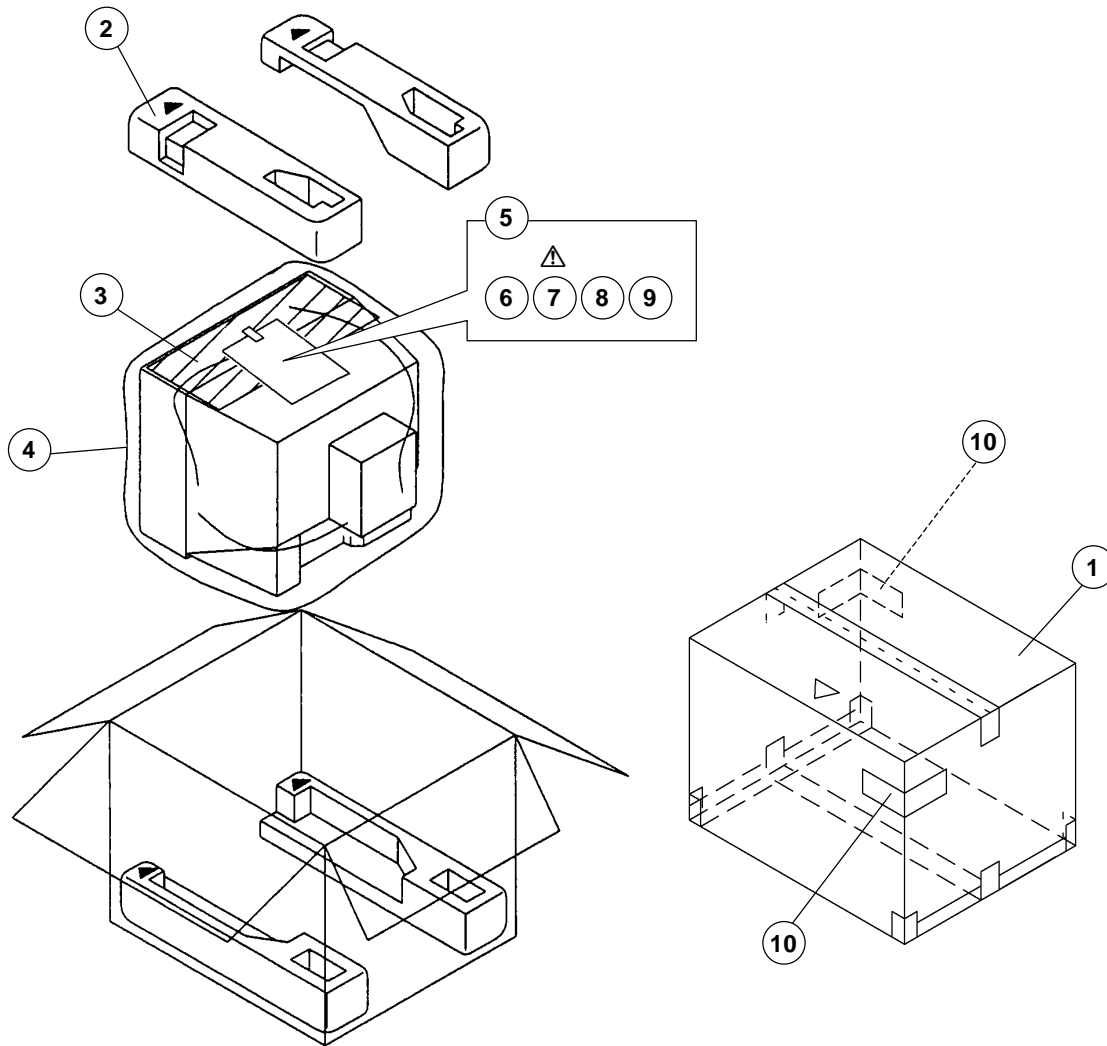
Symbol No.	Part No.	Part Name	Description
RESISTOR			
R9952	QRE121J-222Y	C R	2.2kΩ 1/2W J
R9953	QRE121J-122Y	C R	1.2kΩ 1/2W J
R9956	QRE121J-101Y	C R	100Ω 1/2W J
△ R9981	QRZ9041-275	C R	2.7MΩ 1/2W K
CAPACITOR			
△ C9901	QFZ9040-104	MF CAP.	0.1μF AC275V M
△ C9902	QFZ9040-473	MF CAP.	0.047μFAC275V M
C9951	QETN1EM-227Z	E CAP.	220μF 25V M
C9958	QETN1EM-107Z	E CAP.	100μF 25V M
TRANSFORMER			
△ T9901	QQT0198-001	POWER TRANSF.	
DIODE			
D9941-44	1SR35-400A-T2	SI DIODE	
D9951	MTZJ12C-T2	ZENER DIODE	
D9954	QRE141J-0R0Y	C R	0.0Ω 1/4W J
D9958	1S5133-T2	SI DIODE	
TRANSISTOR			
Q9951	2SC1740S/QR/-T	SI TRANSISTOR	
OTHERS			
△ F9901	QMF0007-6R3J1	FUSE	6.3A
△ FC9901	CEMG002-001Z	FUSE CLIP	(×2)
△ LF9901	QQR0864-002	LINE FILTER	
△ RY9901	QSK0083-001	RELAY	
△ TH9901	CEKP007-002	P.THERMISTOR	
△ VA9901	ERZV10V621CS	VARIATOR	

REMOTE CONTROL UNIT PARTS LIST (RM-C304-1A)

△ Ref.No.	Part No.	Part Name	Description
1	UR52EC1286A	BATTERY COVER	(RM-C304-1A)



PACKING



PACKING PARTS LIST

△ Ref.No.	Part No.	Part Name	Description
1	GQ10009-006A-A	PACKING CASE	4pcs in 1set
2	GQ10021-001A-A	CUSHION ASSY	
3	CP30055-001-A	TOP COVER	
4	CP30056-009-A	POLY BAG	
5	QPA02503505	POLY BAG	2pcs in 1set
6	RM-C304-1A	REMOCON UNIT	
7	LCT0924-001A-A	INST.BOOK	
8	BT-52004-1Q	WARRANTY CARD	
9	BT-51020-1Q	REGISTER CARD	
10	CM36616-001-A	CORNER LABEL	